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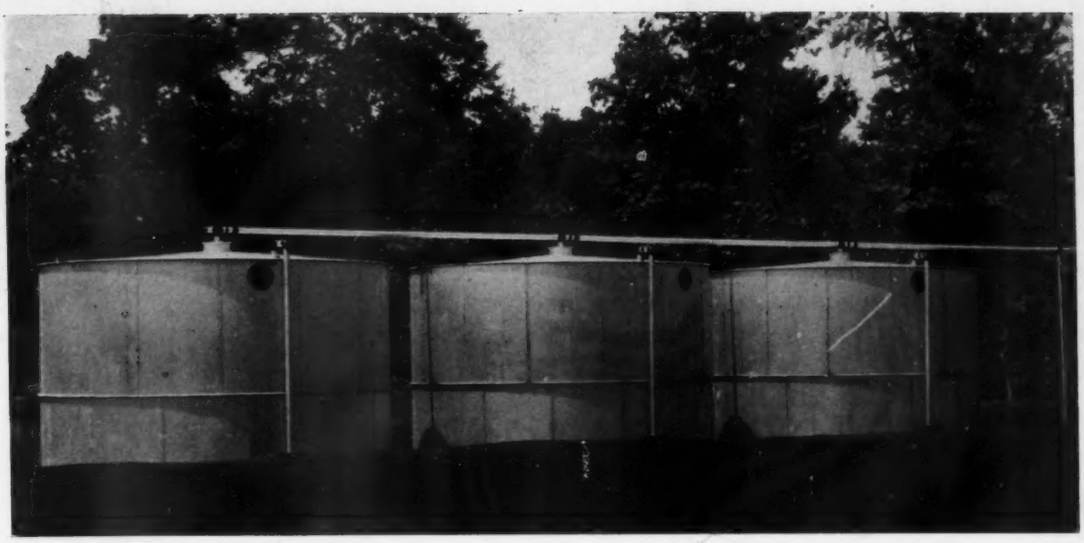

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THE OIL AND GAS JOURNAL

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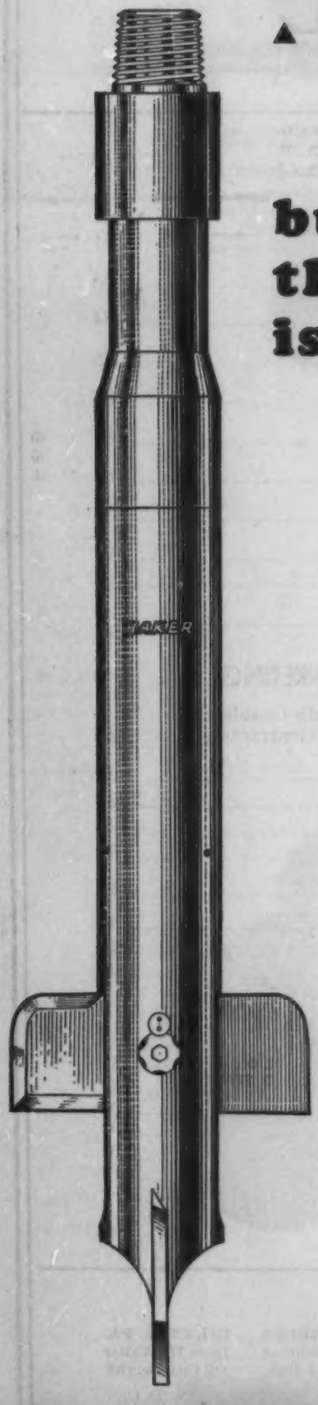

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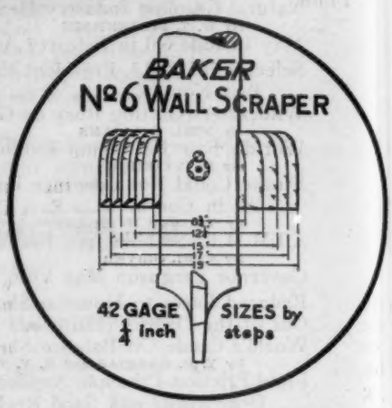

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Outlook Far Brighter as Result of Developments in East Texas With Better Prices Necessary

By ANDREW M. ROWLEY

VERY material improvement in conditions affecting the petroleum industry is expected this summer. An intensive study of developments in the East Texas Field since that area was opened to almost unrestricted production on April 24 proves conclusively to a majority of engineers and geologists that East Texas rapidly is passing from the picture as the big menace to stability in the oil business. Officials of the different oil companies, after studying reports prepared by their technical men on conditions in East Texas, feel far more hopeful regarding the outlook for the crude oil market.

In this issue of The Oil and Gas Journal there is a comprehensive article covering conditions in East Texas. When the facts brought out in that story are realized by a great majority of oil men, there will be an immediate strengthening of the crude oil price structure. Present low crude oil prices were justified as long as the industry was swamped with the flood from East Texas and as long as it was not possible to determine accurately how long that flood would continue. But these prices will not last when it is known the flowing life of East Texas is limited very definitely and that within two weeks from this time large numbers of wells will be forced on the pump in the East Texas Field.

The most important factor in the entire situation is that the great damage already has been done in East Texas and, regardless of what the Texas Railroad Commission may do or what orders may be issued, that damage cannot be repaired.

The petroleum industry should not wait until expected conditions actually obtain in East Texas before improving the price structures, especially refined oil prices. It has been the contention of many that crude oil prices were dependent on the income from refined products. The writer never has subscribed to that view but reducing the price of gasoline at this period of the year certainly is no way to improve conditions.

Every effort should be made at this time to eliminate the distress price level of gasoline. The season of maximum consumption is opening. If the petroleum industry has any hope whatever of operating at a profit now is the time to put its own house in order as far as gasoline prices are concerned. Better crude oil prices are inevitable and there should be no delay in improving the refined market price structure.

Crude Oil Production in the United States

Estimated daily average production for the week ending May 13, and a comparison with previous week and one year ago, follows:

Oklahoma—	May 13	May 6	May 14, 1932
Oklahoma City	175,865	180,985	116,315
Seminole-St. Louis	93,540	88,615	119,630
Remainder of State	194,915	195,465	206,465
Total Oklahoma	464,320	465,065	442,410
East Texas—			
Lathrop	435,645	420,595	124,024
Kilgore	329,390	300,430	103,305
Joiner	308,145	283,415	105,615
Total East Texas	1,073,180	1,004,440	332,944
West Texas	157,746	161,254	184,310
North Central Texas	70,805	74,115	75,448
Texas Panhandle	43,695	47,009	51,652
East Central Texas	58,561	58,597	56,835
Gulf Coast—Texas	186,312	168,961	107,595
Southwest Texas	53,733	53,910	60,146
Total State of Texas	1,644,032	1,568,286	868,930
Kansas	116,210	117,140	96,220
North Louisiana	27,435	28,390	29,520
Gulf Coast—Louisiana	42,246	41,156	37,585
Arkansas	29,945	30,125	34,385
Eastern Fields	107,000	105,000	119,000
Rocky Mountain area	74,996	74,877	82,051
California—			
Santa Fe Springs	54,500	54,500	66,000
Long Beach	73,750	73,000	81,500
Playa Del Rey	11,500	11,750	19,000
Elwood	13,250	13,500	16,500
Kettleman Hills	62,000	56,250	58,000
Remainder of State	263,000	263,500	277,000
Total California	478,000	472,500	518,000
Total United States	2,984,184	2,902,539	2,228,101

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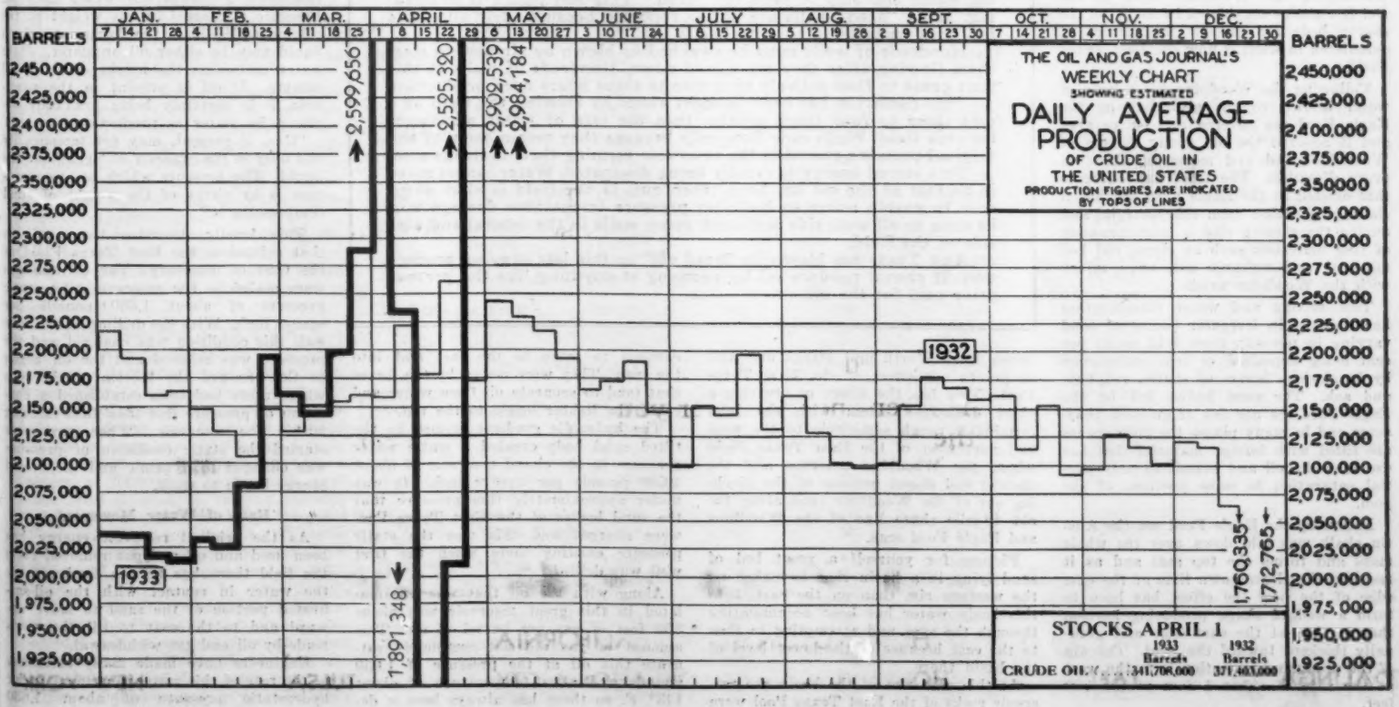

Recent Orgy of Production in East Texas Field Has Definitely Shortened the Flowing Life

By L. G. E. BIGNELL
Petroleum Engineering Editor

Since the latest order of the Railroad Commission of Texas allowing the East Texas Field a daily production of about 750,000 bbls. became effective April 24 and the actual oil taken from the wells in that field has exceeded 1,000,000 bbls. daily there has been much speculation as to the effect of this rapid rate of withdrawal upon the future production of this field.

Opinions differ over a very wide range but certain facts have been ascertained since this high rate of production began, and prior to that time, which indicate very definitely that at this rate of production the repressuring effect of water movement is greatly retarded and the oil is being produced largely from such reserve energy still remaining in the various sand lenses or bodies comprising this producing horizon.

To get at the facts it is necessary to recite some of the general history of this field and trace various conditions through the cycles of both geological and modern time. This will be done as briefly as possible merely to pave the way to a more detailed discussion of events that have occurred during the past three weeks.

Brief Geology of Area

During the time that the Woodbine sea covered the western slope of the Sabine uplift a large body of good clean sand was deposited along the old shore line. This sand body increased in thickness toward the west and out in the deeper basin of the sea has been penetrated by holes for a thickness of over 700 feet. Underlying the Woodbine sand is the Del Rio shales considered by many as the source beds for the oil that later accumulated in what is now the East Texas Field.

Following the Woodbine sea a body of water known to the geologists as the Eagle Ford sea covered this entire area and it scoured the old sandy bottom of Woodbine sand and moved it about in every direction. The tides and currents that existed in the Eagle Ford sea had a classifying action upon this material and during the same period a large quantity of fine materials such as clays, red bed material and volcanic ash were mixed with the Woodbine sands.

This mixing and water classification has resulted in irregular bodies of sand varying in porosity from 9.75 to 31 per cent being deposited in beds surrounded by impervious layers of shales, red beds and ash. The sand bodies left by the Eagle Ford sea are not of uniform character and in many places the pore spaces are filled with foreign material that has excluded the oil and permitted only partial saturation in some portions of the pool.

Following the Eagle Ford sea the Austin chalk was laid down over the whole mass and forms the top seal and as it rests on the Georgetown lime at the east edge of the pool the effect has been to form a wedged shape producing horizon that is thin at the east edge and gradually thickens toward the west. The dip of the producing formation is to the west at the rate of about 1 foot to the 100 feet.

Nature having prepared this old shore line with its beds of sand surrounded by impervious material and closed at the eastern line of contact between Austin chalk and Georgetown lime has made an ideal reservoir into which the oils formed over a very large area to the west of the old shore line was gradually accumulated.

The Woodbine sand dips to the west of the field but outcrops along a line between Fort Worth and Dallas and also at points northwest of the East Texas Pool. This has the effect of creating a giant drainage system with the inlet forming a rough semicircle to the west and northwest of the East Texas Field where the Woodbine outcrops and the eastern end closed because of the pinching out of the Woodbine sand along the old 40-mile shore line of the Woodbine and Eagle Ford seas.

Picture for yourself a great bed of sand lying in a basin that is higher on the western rim than on the east. Into this basin water has been accumulating through the ages and attempting to flow to the east because of the lower level of the basin there.

At this east rim of the basin the reservoir rocks of the East Texas Pool were laid down and sealed by the overlying beds of Austin chalk. The closed portion of the drainage system is comparatively small when considered in connection with the whole drainage area.

Having this natural condition created and the formation of hydrocarbons taking place in the basin to the west of the shore line and closed reservoir the natural tendency is for the lighter hydrocarbons to move to the east and into the trap. They were moved by the forces that tend to separate oil from water and carry the lighter liquid to the top.

The hydraulic gradient formed by the tilted sand body created a static water pressure in the closed reservoir of about 1,630 pounds per square inch. It was under approximately this pressure that the sand bodies of the East Texas Pool were charged and this was the static pressure existing there when the first well was drilled.

Along with the oil that was accumulated in this great reservoir was about 350 feet of gas per barrel of oil. This amount of gas did not completely saturate this oil at the pressure of 1,630 pounds and at a temperature of about 143° F. so there has always been a deficiency of gas in this area and no free gas at any time excepting a small area in the southwest portion of the pool.

It has been assumed that under the pressure of 1,630 pounds and temperature of 143° F. the gases heavier than butane are in liquid state. The mixing of butane liquid with crude oil in laboratory work has indicated that the mixture will take a greater amount of methane gas than the same amount of crude oil. This therefore indicates that the mixture of oil and gas existed in the East Texas Pool at the time of discovery had a marked deficiency of gas in solution in the oil.

This condition has a marked effect upon the problem of recovery as will be later pointed out. Lacking free gas has placed this pool in the class of producing reservoirs that depend largely upon hydrostatic pressure for movement of the oil through the sands.

Types of Energy

Stanley C. Herold in his book, "Analytical Principles of the Production of Oil, Gas and Water," has discussed in detail the laws of physics and mathematics which are demonstrated by the production of oil and gas from wells. He says: "The several classes of reservoirs which are of interest in determining the laws of delivery from oil and gas wells and likewise those oil and gas reservoirs themselves, are separated into three groups according to the 'control.' The groups are designated thus:

"(a) Hydraulic control.
"(b) Volumetric control.
"(c) Capillary control.

"The classification is based solely upon mathematical relations which are prescribed by the laws of physics."

The East Texas Field falls into the class of hydraulic control about which Mr. Herold says:

"The porous formation of this class of wells either outcrops or is in communication with a porous one which does so. Pressure is exerted by the weight of the column of liquid in the formation. Such liquid may be either oil or water. Rain water maintains the height of the fluid column. If oil is present in the reservoir, it is certainly being gradually replaced by water as production proceeds.

"Gas, if present, may act temporarily and only in the capacity of 'agent' for the liquid. The pressure which gas possesses here is by virtue of the weight of fluid compressing it."

This briefly describes the condition that existed in the East Texas Field at the time of discovery. The oil and gas were sealed in the reservoir at a static pressure of about 1,630 pounds per square inch. With the drilling of the first well this condition was changed and the pressure was relieved and the oil began to flow toward the bottom of the hole where there had been established a condition of pressure less than that existing within the reservoir. When movement started the static condition of pressure was changed to dynamic and the stored energy began to work.

Rate of Water Movement

As the original reservoir energy has been used and oil and gas removed from the field there has been a tendency for the water in contact with the oil-saturated portion of the sand to move upward and to the east to fill the voids made by oil and gas withdrawal.

Engineers have made many estimates of the rate of this water movement under hydrostatic pressure of about 1,630

Natural Flowing Life of East Texas Definitely Limited

The East Texas Field has been on a rampage since April 24. It has averaged over 1,000,000 bbls. production per day since May 1. The bottom hole pressure has fallen about 6 pounds per day since May 1. Producing at from 325,000 to 400,000 bbls. per day the pressure drop was less than 1 pound per 1,000,000 bbls.

Average bottom hole pressure for the field on May 10 was 1,313 pounds. Statistics indicate a majority of East Texas wells will cease natural flow at approximately 1,200 pounds bottom hole pressure.

The increased pressure drop of 5 pounds per 1,000,000 bbls. will create a bottom hole pressure below flowing pressure for many thousands of wells in from 30 to 60 days.

At 6 pounds drop per 1,000,000 bbls. the field will reach 1,200 pounds bottom hole pressure by May 30. This will cause hundreds of wells to go on the pump.

At the 1,000,000-bbl. daily rate thousands of wells will be forced on the pump at 1,000-pound bottom hole pressure by July 1.

Between 800 and 1,000 wells along the east side of the field have been affected by the open flow since April 24. These wells either have stopped flowing entirely or have fallen to such an extent they are unable to make their allowable. A majority are in the south portion but others are all along the east side.

Revised bottom hole pressure reports show average drop since April 24 has been 4.85 pounds per day. From May 6 to 10, when last bottom hole pressure check was made, average was 5.95 pounds daily with rate of drop increasing.

Repressuring will be delayed because of the recent high withdrawal rate. At 1,374 pounds average bottom hole pressure the field could produce only 282,000 bbls. daily if water pressure held bottom hole pressure constant.

It would require from 30 to 45 days shut in to repressure the field to 1,374 pounds by water movement. West side wells would be drowned out during such a shut-in period. Water would also finger into good sand areas and cut off future production.

A report prior to April 24 showed 225 pumpers, 261 wells making water and only 55 reported "dead." This last figure is misleading. Many "dead" wells are not so reported because their allowable has been transferred to other wells.

Hundreds of wells must be swabbed or blown by air now to start them flowing after they are closed down. Hundreds of wells at this time cease to flow entirely after two to three hours open production.

This condition has been brought about by flowing the field at a rate three to four times greater than the rate of water movement into the field. Wells now flow only because they retain some of the original pressure stored in the reservoir forming their drainage area.

This stored energy is rapidly being dissipated. Water cannot move in as fast as the oil has been taken out. If the field is shut down now to enable water to build up pressure irreparable damage will be done to all west side wells and many wells in the central and east side of the field.

East Texas has blown its "head off" in this last orgy of production. It cannot produce oil by pumping at anything like the present price paid for the oil.

pounds per square inch through this reservoir. Early estimates placed the replacement rate at 225,000 bbls. per day. Later these figures were about 250,000 bbls. They were both approximately correct at the time because the existing reservoir pressure was different at the time of making the two estimates.

Other engineers have compiled carefully bottom hole records since June, 1931, and have made production-pressure diagrams that have given them the basis for a more detailed study of rate of water movement. They have found that for given reservoir pressures varying amounts of water will flow into the reservoir. This movement is based upon the existing differential in pressures existing in the reservoir between water under hydrostatic head and reservoir pressure.

With these formulas compiled it was predicted that when the average bottom hole pressure for the field reached 1,374 pounds per square inch the rate of water movement necessary to maintain this pressure within the reservoir would be 282,000 bbls. per day. That is to prevent further drop in bottom hole pressure oil could only be withdrawn at the rate of 282,000 bbls. per day with the bottom hole pressure for the field averaging 1,374 pounds per square inch absolute.

Effect of Rapid Withdrawal

The ideal condition for East Texas Field would be to withdraw oil at that rate that would permit the repressuring by natural water flooding to be constant. There is abundance of water along the 40-mile front of this field to gradually force all recoverable oil from the western edge to the eastern closure if the rate of withdrawal were regulated.

To establish this condition has long been the desire of the engineers interested in East Texas production. Ample data have been available for a long time to have established such flowing rates but other considerations have been allowed to enter into the problem frequently and such an ideal condition has not been maintained.

So long as the allowable for the field was placed at 325,000 bbls. per day there was a slow drop in bottom hole pressure. With an increased rate of production this drop has been materially higher and it is now estimated that during this last three weeks' period of very rapid production the drop in pressure has been about 6 pounds per day.

The average bottom hole pressure for the East Texas Field on April 30 is reported as 1,371 pounds per square inch and on May 10 it was 1,325 pounds. This very rapid drop in pressure has been created by the production rate of more than a million barrels per day during this nine-day period.

The rate of oil production has been so much in excess of the rate of water repressuring that many are puzzled to account for the energy that has been made available to produce this oil if it is granted that this energy could not have come from repressuring by water movement or expanding gas.

This is explained by considering the fact that the pool still contains an appreciable portion of the original stored energy that was in the reservoir when it was opened.

Field Compared With Tanks

If this field is considered as a large number of individual sand bodies interconnected with one another and also in communication with the western water body an analogy can be drawn between any one of these sand bodies and a tank.

It might better be compared with a battery of 55,000-bbl. tanks, each tank filled with a sand of varying porosity and then all charged with oil to the point of saturation and gas equal to 350 cubic feet per barrel of oil and the whole system closed under a pressure of 1,630 pounds.

These tanks are connected with one another by pipe lines and each tank is also provided with a vertical flow pipe that will deliver oil from that particular tank. The vertical flow pipes may have different diameters and be provided with a variety of fittings at the discharge end.

As the vertical flow pipe in each tank is put into place and the oil and gas is withdrawn from that tank it will have an effect upon the entire system of tanks in the battery. If one tank flows its oil at a high rate there will be a rapid drop in pressure in the charged sand reservoir. Such a condition will set up differentials in pressure between the tank of rapid withdrawal and other tanks that have been produced at slower rates.

If all withdrawal is then stopped and the system is allowed to stand dormant for a time there will be a tendency for the pressures between individual tanks to equalize but the total amount of energy that remains in the system will be diminished. After a period of shutdown the withdrawal again takes place but all flow pipes are opened to full capacity and the whole system is subjected to rapid drainage. This will create rapid drop in pressure and the pipes will only deliver oil so long as the reservoir pressure in the individual tank is great enough to bring about natural flow of oil and gas.

It has been definitely proven by many tests that this gas in solution in the oil will not come out of solution until the pressure surrounding it is dropped to 775 pounds per square inch absolute. It therefore must follow that the flow of the oil is not affected by expanding gas in the oil until bottom hole pressures drop below 775 pounds.

There is a condition that must be considered in this connection that has had a marked effect upon production in East Texas. While the average bottom hole pressure for the field has never dropped as low as 775 pounds there have been numerous spots or areas in which this low pressure has been reached. These local low-pressure areas have tended to permit gas to come out of solution not only immediately around the well but at some distance back from the hole where low pressures have existed.

Great differentials in pressures between adjacent areas will have an effect upon rate of production of wells. The wells of low pressure will draw oil from the higher pressure areas and the rate of movement of this oil with the gas in solution will be controlled largely by the characteristics of the sand body. It will require more energy to move the oil through tight sand lenses than through open sands but regardless of the degree of drainage of energy it will go on to some extent wherever differentials in pressures exist in the sand.

Flowing Life of Field

The natural question that has arisen during this recent period of excessive rate of production is "How long will the wells in East Texas continue to flow naturally?" There is no one answer to this question because it has been quite definitely proven that different wells will act very differently under varying flow conditions.

Again considering the battery of 55,000-bbl. tanks that are interconnected and each provided with a vertical flow system. Let us now set up at some high point another group of tanks or a reservoir filled with water that is connected by pipe lines to each tank. This trunk line is large enough to deliver a full volume of water from the elevated reservoir to a manifold from which the water is delivered to each tank by a separate short pipe line.

This is an open pipe line system and so long as the pressure exerted by the hydrostatic head is great enough it will drive the water into the sand-filled 55,000-bbl. tanks containing oil and gas. These water lines are assumed to be connected near the bottom of the tanks and as water is admitted the water level will raise equally in each tank if the rate of withdrawal of the oil is controlled.

If, on the other hand, one tank draws its oil out much more rapidly than the others there would be a tendency for the water to move into that tank at greater than the average rate for tanks maintaining a higher pressure.

Such rapid water movement will tend to create channels through the sand in the low-pressure tanks and this water will move at greater speed toward the point of low pressure surrounding the vertical flow pipe. As soon as this water has communication with this vertical flow pipe it will flow unrestricted and the oil will no longer be able to escape but will be trapped in the sand and can only be recovered later by expensive production methods. In fact there are some engineers who doubt as to whether it can ever be recovered when the sand is water saturated.

If the East Texas Field had always been regulated as to the rate of daily

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East Texas Pressure and Production

Date	Area—	Average bottom hole pressure at -3,300'	Drop from original pressure of 1,671 total	Drop from previous pressure for interval	Cumulative production to date 1,000 bbls.	Production for interval 1,000 bbls.	Cumulative pressure drop per million bbls.	Pressure drop for interval per million bbls.
11-25-31	Lathrop	1,472	199	199	19,912	19,912		
	Kilgore	1,480	191	191	36,009	36,009		
	Joiner	1,372	299	299	30,677	30,677		
	Total field.	1,449	222	222	86,598	86,598	2.563	2.5630
2-22-32	Lathrop	1,454	217	18	29,796	9,884		
	Kilgore	1,459	212	21	46,962	10,953		
	Joiner	1,432	239	+60	40,500	9,823		
	Total field.	1,448	223	1	117,258	30,660	1.901	0.0326
4-25-32	Lathrop	1,449	222	5	39,813	10,017		
	Kilgore	1,447	224	11	55,071	8,109		
	Joiner	1,403	268	29	49,407	8,907		
	Total field.	1,433	238	5	144,291	27,033	1,650	0.1850
6-27-32	Lathrop	1,443	228	6	47,734	7,921		
	Kilgore	1,449	222	+2	61,612	12,205		
	Joiner	1,395	276	8	56,157	6,750		
	Total field.	1,429	242	4	165,503	21,212	1.462	0.1885
8-22-32	Lathrop	1,416	255	27	55,048	7,314		
	Kilgore	1,431	240	18	67,447	5,835		
	Joiner	1,391	280	4	62,255	6,098		
	Total field.	1,412	259	17	184,750	19,247	1.402	0.883
10-24-32	Lathrop	1,414	257	2	63,933	8,885		
	Kilgore	1,422	249	9	74,326	6,879		
	Joiner	1,362	309	29	69,509	7,254		
	Total field.	1,399	272	13	207,768	23,018	1.310	0.565
12-19-32	Lathrop	1,400	271	14	71,195	7,262		
	Kilgore	1,420	251	2	79,981	5,655		
	Joiner	1,342	329	20	75,524	6,015		
	Total field.	1,387	284	12	226,700	18,932	1.254	0.634
1-16-33	Lathrop	1,429	242	+29	72,686	1,491		
	Kilgore	1,430	241	+10	81,169	1,188		
	Joiner	1,393	278	+51	76,742	1,218		
	Total field.	1,417	254	+30	230,597	3,897	1.102	
2-27-33	Lathrop	1,409	262	20	77,477	4,791		
	Kilgore	1,412	259	18	84,958	3,789		
	Joiner	1,378	293	15	80,660	3,918		
	Total field.	1,400	271	17	243,095	12,498	1.114	1.360
4- 6-33	Lathrop	1,360	311	49	82,560			
	Kilgore	1,374	297	38	88,929			
	Joiner	1,299	372	79	84,815			
	Total field.	1,344	327	56	256,304	13,209	1.275	4.24
4-24-33	Lathrop	1,382	289	+22	82,560			
	Kilgore	1,399	272	+25	88,929			
	Joiner	1,342	329	+43	84,815			
	Total field.	1,374	297	+30	256,304		1,158	
5- 8-33	Lathrop	1,332	339	50	87,775	5,215		
	Kilgore	1,344	327	55	92,680	3,751		
	Joiner	1,275	396	67	88,473	3,658		
	Total field.	1,313	358	61	268,929	12,625	1.335	4.85

Recent Developments Make It Appear Natural Gasoline Industry Headed for Better Times

By W. T. ZIEGENHAIN

The past year of low motor fuel prices did not dampen the interest of those attending the annual convention of the Natural Gasoline Association of America in Tulsa during the first three days of this week. Instead, the general belief is expressed that that industry has passed through the worst of the cycle and plans may be formulated now to rebuild a normal price structure.

Conditions are shaping themselves to permit a sane expansion of manufacturing facilities, the expansion of markets for by-products as special fuels and a fuller co-operation with ethical jobbers in the sale of 100 per cent low vapor pressure natural as a motor fuel. These subjects, together with the usual discussion of technical phases of modern manufacturing principles, held the interest in well attended meetings.

In a characteristic plea for "good-fellowship" among those working in the industry Frank L. Chase, of the Lone Star Gasoline Co., offered a brief welcoming address.

He reviewed the rapidly developing "new deal" of the past few weeks and gave his impressions on where it might all lead to. Eight months ago, Mr. Chase said, a man would have been considered a poor prophet had he declared that the United States would be not only facing, but apparently inviting, a dictatorship in this country.

The question of the merits of governmental control of industry, he said, was a very much debated subject. He would not attempt to take any side in the matter, but he called attention to the fact that under the "new deal" the Government already controls banking in all its phases, controls the railroads, controls agriculture, is about to control the coal business, and has its eye on the utilities industry. Now it is considering whether or not it had better attempt to control the oil and gas industry. He saw the approach of the socialization of all industry. Just what the result of all this is to be, the speaker made no attempt to prophesy, but he was satisfied that the United States was going into a new era and that it was up to industry to fit its cloth to the pattern; in other words, to prepare for the change. He made a plea for a strong, well financed association which would be able to cope with the reforms bound to come in the next year.

Following this, S. S. Smith, retiring president of the association for the past two years, chose to outline in concise style the accomplishments of the association since its beginning and to enumerate the problems now in the hands of committees that are bound to benefit the entire industry. His summary offered every opportunity to gain a full understanding of the committee reports which followed, some of which are published in this issue. Mr. Smith's statements in part follow.

He said, "You older members recollect the successful work of the association in equitably settling the controversy with

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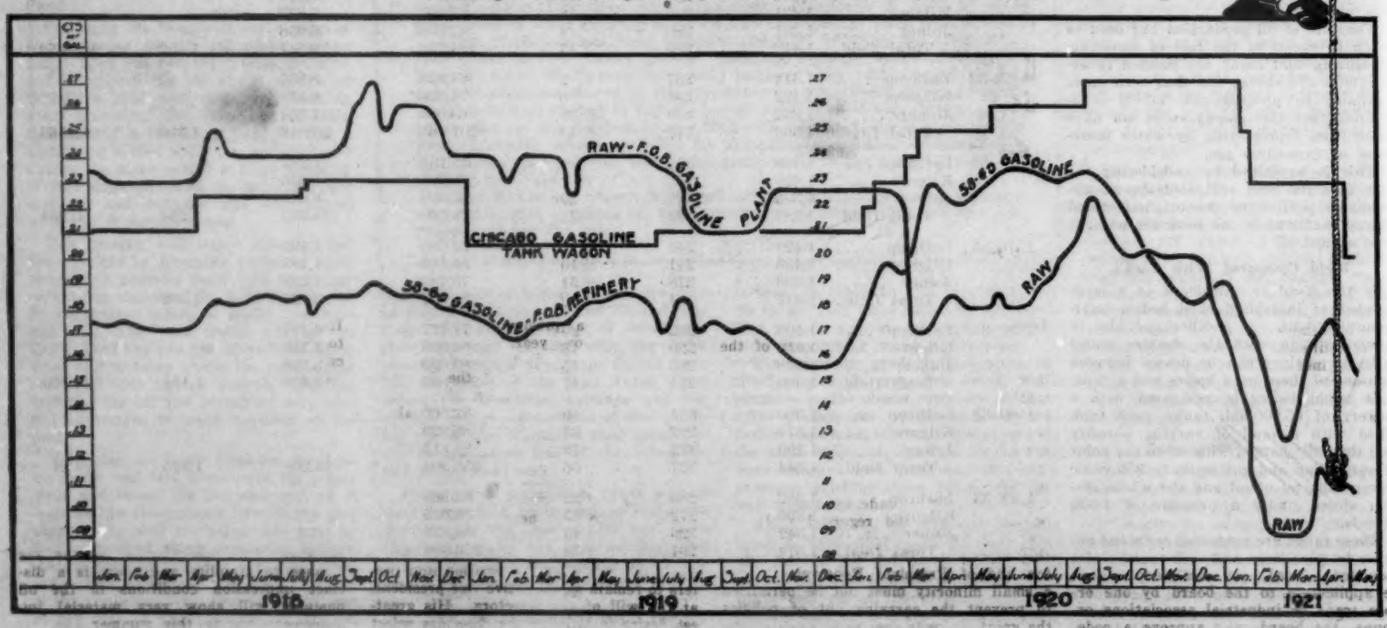
S. S. SMITH
Shell Petroleum Corp., president of the Natural Gasoline Association of America.

W. D. MOORER
Moorlane Co., president of Natural Gasoline Supply Men's Association.

It Must Have Been a Rubber Rope—

REMINISCING—The following drawing was made and circulated within the industry by the Natural Gasoline Association in 1921 as a plea for co-operative action. This was made at the time when the price of raw, unstabilized natural gasoline was 11 cents a gallon (now 1¼ cents), crude oil $1.75 a barrel (now 25 cents), the Chicago net gasoline tank wagon price was 21 cents (now 8.6 cents) and the Oklahoma refinery gasoline price was 15¼ cents (now 2 cents).



—Drawing furnished through courtesy of Victor Gasoline Co.

Oil May Be Included in Industry Agreement Bill; Single Dictatorship Out of the Picture?

NEW YORK, May 15.—Federal legislation affecting the oil industry was discussed in sessions of the Board of Directors of the American Petroleum Institute held on Monday, May 8, and Thursday, May 11, at Institute headquarters, and no action was taken. It was announced by C. B. Ames, president, following adjournment, that the 28 directors present were unwilling to take any stand that would appear to commit the 75 directors and 3,500 members of the Institute to any program of control legislation.

The meeting of the Board of Directors was called after bills had been prepared at Washington that would have given the Secretary of the Interior broad powers to enforce conservation, including authority to determine reasonable market demand and to allocate to states production quotas of crude petroleum; to establish maximum and minimum prices, maintain stripper well production, prevent waste, and eliminate below cost competition resulting from tax evasion. Bills already introduced in Congress by Representative E. W. Marland and Senator Arthur Capper (previously published in The Oil and Gas Journal) would prohibit interstate shipment of illegally produced oil. Directors of the Institute likewise discussed the proposed general industries bill known as the Federal Rehabilitation bill that has been considered in Washington.

Industry Control Bill

The industry control bills discussed by the A.P.I. directorate were those sponsored by Senators Walsh (Mass.) and Wagner (N. Y.) and Col. Hugh Johnson, associate of Bernard M. Baruch and discussed at a White House conference last week, in an effort to bring into a composite bill the most desirable features of each, the impression being that the Wagner bill may be the basis.

The plan is for industry to regulate itself as far as possible, but for the Government to step in when a minority refuses to abide by regulations adopted by the great majority.

The self-regulation plan is to operate through agreements effected by trade associations. These agreements are to be binding on the entire industry. Any minority that refused to agree would lay itself open to penalties to be applied by the Government.

Such agreements would provide for minimum wages, minimum prices, maximum hours of work for labor, and curtailment of production to avoid excessive surpluses. At present such agreements are in violation of the antitrust laws. They would be exempted from these laws under the measure being drafted.

Penalties for refusal of a minority to abide by these agreements were under discussion. One of these would provide for fines to be levied against concerns refusing to comply. The other would provide for a tax, to be levied theoretically against an entire industry but with a provision that concerns accepting the trade agreements would be exempt.

The entire system of government supervision of industry would be under the administration of an industrial control board. This agency would have power of approval or disapproval of the trade agreements and authority to require compliance with them. Appeals from its decisions could be taken to the courts.

According to the Wagner bill the industrial recovery board would consist of the Secretaries of Commerce, Labor, Agriculture and Interior, and an executive to be chairman of the board.

Section 3 (a), provides that "upon the application to the board by one or more trade or industrial associations or groups, the board may approve a code or codes of trade practices for the trade or industry or subdivision thereof, represented by the applicant or applicants, if the board finds that such associations or groups impose no inequitable restrictions on admission to membership therein and are truly representative of such trades or industries or subdivisions thereof, and that such code or codes will tend to effectuate the policy of this title.

"The board may, prior to the approval of any such code impose such conditions (including requirements for the making of reports and the keeping of accounts), for the protection of consumers, competitors, employes and others, and in furtherance of the public interest and may provide such exceptions to and exemptions from the provisions of such code, as the board in its discretion deems necessary to effectuate the policy herein declared."

Penalties for Violations

After the board shall have duly made and entered an order approving any such code it "shall be the standards of fair practice for such trade or industry or subdivision thereof. Any violation of such standards in any transaction in or affecting interstate commerce shall be deemed an unfair method of competition in commerce within the meaning of the Federal Trade Commission Act." Appropriate penalties for violations will be provided.

A penal tax is being worked out in the form of a levy upon the gross re-

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Selection of President of Institute Is Especially Important to the Entire Oil Business Now

By ANDREW M. ROWLEY

Of paramount interest to the hundreds of members of the American Petroleum Institute assembling in Tulsa this week for the annual mid-year meetings of the Divisions of Production, Refining and Marketing is the selection of a president to succeed C. B. Ames, who resigned last week to become Chairman of the Board of The Texas Company. The

AXTELL J. BYLES

nominating committee will present its report to the Board of Directors of the Institute at a meeting of the board Wednesday afternoon and, it is expected, the board will make its selection at that time.

Seldom, if ever, in the history of the organization has the selection of a president meant so much. With the administration at Washington giving recognition to trade associations and the new attitude being displayed in regard to the antitrust laws, a new era has opened, making trade associations a far greater factor in the conduct of industry. From this time on it is felt trade associations will be looked upon and regarded really as sort of governing boards of the industries they represent. The attitude at Washington and of President Roosevelt is that a small minority must not be permitted to prevent the carrying out of policies the great majority feel to be best for the welfare of the business. Action or definition of policies by trade associations, consequently, would be regarded as the viewpoint and policy of the majority.

Under such conditions the nominating committee of the Institute has a big job. The man selected to head the organization must be of the type to command the respect of the entire petroleum industry and one who can represent every branch of the oil business with fairness and intelligence. He must be entirely familiar with the many and diversified problems of the industry; have courage to face these problems and to take definite and direct action towards solving them. He must be able to present the industry's side of these problems clearly and forcefully.

The nominating committee is handicapped in its work by reason of the fact the by laws of the Institute provide for the election of a president at the annual meeting and that meeting is scheduled for next October, a bare five months distant. If it is desired to select a man to devote all his time to the position, as has been the policy of the Institute since November 1931, with proper compensation for this work, it is a most difficult matter to persuade a man, big enough for the place, to give up a position he now holds and which may be regarded as permanent, to accept a position which might only last for five months.

With many changes made annually in the membership of the Board of Directors and differences in views always arising, there is no certainty under the present set-up that the president would be re-elected after his term of office expired.

Because of these conditions, both within the Institute and at Washington, it is understood consideration is being given by Directors of the American Petroleum Institute to a proposal to amend its constitution and by laws to permit the selection of a president for a period of more than one year.

It is also felt that should the constitution and by laws of the Institute be so amended the position of president of the organization with a proper salary, will be offered to Axtell J. Byles, president of the Tide Water Oil Company of New York. William R. Boyd, Jr., would continue as executive vice president in charge of the operation of the Institute.

Despite the fact there is a very strong sentiment among directors of the Institute to select Mr. Boyd as president, he is not a candidate for the position and prefers to remain an executive vice president, at the will of the directors. His greatest desire is to have the directors select a man for the presidency who can be of real aid and service to the entire petroleum industry. He will co-operate to the extent of his ability with the man selected as president.

Mr. Byles is regarded as an ideal man for the position of president of the Institute. He is young, aggressive in a tactful way, has a broad view of the

WILLIAM R. BOYD, Jr.

problems confronting the oil business, is one of the best speakers in the entire industry and has the faculty of presenting his views in a clear, concise and convincing manner.

The meeting of the divisions of the Institute in Tulsa this week is expected to be one of the largest attended because of the many important subjects which will be discussed. It also offers a splendid opportunity for men from different sections of the country to get together and ascertain first hand the conditions existing in the various areas and to obtain better ideas as to the outlook.

A spirit of optimism pervades the gatherings in the Mayo Hotel. It is generally conceded East Texas is rapidly passing from the picture as the big menace to stability and there is a distinct impression conditions in the oil business will show very material improvement during this summer.

Wildcatters Getting Busy in Gulf Coast District; Tomball and Polk County Most Active

By NEIL WILLIAMS

HOUSTON, Tex., May 15.—Much has been written concerning the active wildcat exploration and development program which has been going on throughout the Gulf Coast. Within the past year there has been a concentration of operations in this area. Many hundreds of thousands of acres have been leased and blocked; geophysical work, which has been experiencing a lull since 1930, has been revived; scores of wildcats have been drilled, both on old and new prospects, and a number of new fields have been opened and indications given of others.

To state this activity will continue and possibly increase during the coming summer and autumn seems a little inconsistent in view of the present low and unprofitable prices and apparent flood of crude on the market. In line with this there has been a decided letup in development in and around proven fields and areas, where operations have been curtailed to a minimum, and during the past two or three months there has been a material decrease in the number of wildcats being put down.

Wildcatters Busy Again

On the other hand, the wildcatter seems to have given but very little thought to the low prices as another spurt in wildcatting is springing up and considerable new development is anticipated generally throughout the coast in the immediate future. The activity, however, is not due to a desire on the part of operators to bring in a lot of new flush production at this time, but there is a growing belief here that the Gulf Coast, due to its market accessibility, will be called upon to supply a great part of the petroleum needs of the industry of the future, and the play which has been and now is going on is a part of a more or less concerted effort of the industry to prove up these reserves that they may be available when required.

There is hardly a section of the Gulf Coast to which some attention is not being directed and there is hardly a county or parish on the coast in which there is not at least one or two "hot" spots and where there is not some play going on. For the most widespread interest and most extensive wildcat development the Tomball district of northern Harris County and the southern Polk County area have been and are most in the limelight. These two districts are due for intensive drilling activity during the remainder of this year.

However, the extent of Tomball will hinge largely on the outcome of two tests now being drilled by Magnolia Petroleum Co. If either of these wildcats find any production or showings at all there no doubt will be a rush to drill. Already many tentative locations have been staked in expectation of the Railroad Commission placing drilling restrictions on the area and possibly unitising the acreage if oil is found. Even if these tests are dry there probably will be some additional drilling although the edge may have been taken off. Much has been staked on the Tomball district being an important oil field. The lease and royalty play which took place was the most widespread and "wild" of any which have ever been witnessed on the coast; prices have been on a proven acreage basis, and all in all the district has been treated as a proven field.

Development Will Be Orderly

The recent purchase by Humble Oil & Refining Co. of an undivided half interest in Magnolia's 10,000-acre block at Tomball, on which the two wildcats are drilling, has placed additional importance on the area. That company also recently purchased the approximate 1,100 acres owned by the Standard Oil Co. of Kansas. Humble already owns approximately 9,000 acres in a block adjoining to the south of the Magnolia block. Placing of so much of the prospective field under one control will tend to place development on a more orderly basis. However, extensive acreage holdings throughout the rest of that district are divided among numerous ownerships which will call for much drilling.

A new incentive for wildcatting in Polk County, looked upon as one of the most prospective areas on the coast, has been stimulated by the proving up of production in the Livingston district. A half dozen operations now are under way in the county. The immediate Livingston Field will call for considerable drilling in the program of development to outline the field but nearly all the south half of the county is under lease as a result of the intense lease play which swept along the "Conroe trend" the past year. A district now being watched closely is that southeast of Leggett in central Polk County, where Boone, Clark & Boone are putting down a wildcat. This is in the heart of an area in which Mid-Kansas Oil & Gas Co. had considerable geophysical work done recently and which was blocked by the latter company. Approximately 15 miles southeast of the Livingston Field, Kirby Petroleum Co. is starting a wildcat in the James Stephenson Survey.

Drilling Along "Conroe Trend"

New drilling is due to be started all along the so-called "Conroe trend," where millions of acres are under lease extending not only through Texas but also across Louisiana and into Mississippi.

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World's Fair in Chicago, Opening May 27, Will Have Great Exhibit on Petroleum

By R. C. CONINE

CHICAGO, May 15. — A Century of Progress International Exposition which opens on May 27, will be essentially an animated or "process" portrayal of man's achievements during the past 100 years. The petroleum industry recognized in this exposition an ideal opportunity to present a complete story of oil operations. Moreover, it was found that by meeting certain high standards, the portrayal would later be given permanent space in the Museum of Science and Industry in Chicago.

Accordingly, a committee of directors of the American Petroleum Institute was appointed, which investigated and recommended participation by member companies in both these endeavors, under auspices of the Institute. This committee functioned further to the extent of financing the cost of securing subscriptions of various oil companies and supervised the making of the plans for the exhibit. When completed, the exhibit will represent an investment of approximately $150,000.

Over 6,000 square feet of free space in the Hall of Science at the "World's Fair" was allotted this presentation which covers the full range of oil operations as follows: (1) Geological—Aerial, Exploration and Mapping; (2) Geophysical Surveying; (3) Deep Drilling, Subsurface Geology and Allied Subjects; (4) Production, Transportation and Storage; (5) Refining. (Supplement gives list of exhibits in detail.) Every phase of this presentation will be completed on the opening day.

The committee declares that this is the most comprehensive view of petroleum operations which either the public or the industry itself has ever had the opportunity to observe. A model refinery, built almost entirely of glass and covering 300 square feet of space, will make it possible for visitors actually to observe what occurs inside fractionating and treating towers, how dewaxing is accomplished and other major refinery processes, including cracking. This is a functioning plant—not a mere display of inactive equipment. In the 10-foot distillation columns, four fractions will be taken off—gasoline, kerosene, gas oil and lubricating oil. A heavy residue will also be collected. A mechanical voice will explain operations as they occur and the units discussed will be automatically lighted. Both audition and illumination will be synchronized with the functioning of the refinery.

How Oil Wells Produce

Visitors will see many dioramas in the various exhibits at the Fair. Those designed and constructed for the petroleum exhibit are achievements in this type of depiction and several of them have their model parts in action. An especially fine one is 18 feet wide and 12 feet high. It presents a modern oil field with its wells in drilling action, the sky overhead stretching away to the distant horizon, and the underground formations pierced with transparent tubing to the depth of the oil sands. Various drilling wells will bring in oil, salt water and gas. The sealing off of the oil by a fault is shown and the migratory nature of oil is explained. The surface has complete oil field equipment in miniature. The operations in this exhibit are also clarified by synchronized voice and spot illumination.

Some conception of the thorough manner in which action has been introduced to reproduce operating conditions, may be had from these facts—79 motors are used, 49 pumps, 7 air compressors, 4 sound mechanisms, 4 synchronized lighting devices, and 2 scenic projectors. Most of this equipment is entirely concealed along with by-pass tubing, chains, cogs, wires, etc.; but the effects produced by this hidden apparatus are almost unbelievable.

Other exhibits of particular interest include a dramatic portrayal of the Turner Valley Field of Alberta—geologists will be especially interested in the reproduction of the complexly faulted subsurface structure.

A model airplane, flying just beneath "the clouds," will be busily photographing the landscape below for geological mapping.

Electrical Building, Century of Progress World's Fair, Chicago

Miniature Drilling Equipment

The drilling equipment might well represent an achievement in watch-making. Diamond, rotary and cable-tool equipment is displayed. The cable-tool derrick is about 8 feet high, the rotary about 13

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Strake Couldn't Convince Folk There Was Oil at Conroe, So He Drilled a Well Himself

By THOMAS F. SMILEY

You may forget the men who discovered most of the country's big oil fields—probably you can't name a half dozen of them at this moment—but Conroe, county seat of Montgomery County, Texas, has no intention of letting it be forgot that George William Strake discovered the Conroe Field. After you have talked with some of his friends and have watched the man himself, you come to understand something of his hold on the regard of so many different persons.

When the Strake No. 1 South Texas Development Co. was completed December 13, 1931, Conroe, 3½ miles to the northwest of the well, was a rather sleepy, self-satisfied village of 2,000. Today its population is estimated at 7,000 to 9,000. Automobiles clog the intersection of its main street with the one that leads to the field. The postoffice staff works perspiringly under the crush of additional mail. Bank deposits have more than doubled.

The town unreservedly, tirelessly and at times vociferously accords G. W. Strake credit for the transformation. Property owners who have seen the value of their holdings rise feel that they have him to thank for it and they lose no opportunity to make that fact known.

Mr. Strake was taken by surprise one day in November, 1932, when he opened his Conroe Courier and found the following staring at him from a full page of that newspaper:

"We wish to acknowledge publicly our debt of gratitude to our employer, George W. Strake. He has been a kind and tolerant man, under whose direction it has been a genuine pleasure to work and enjoy the fruits of our efforts; and now, characteristic of his kindly nature and consideration for those in his employ, comes this unexpected windfall in the form of a bonus far beyond our wildest expectations. He is like that—modest in the extreme, unpretentious in his actions, big-hearted to the core, just a whole-souled good fellow and a man with whom we are proud to be associated. With no flourish of trumpets or ostentation of any manner he called us to his office in the Gulf Building in Houston and with a few simple words told us he was pleased with our work and substantiated his statements with a handsome bonus check payable to each of us. Few men are more fortunate than we who compose the 'Strake crew.' We are satisfied with our jobs and proud of our boss. We thank him not alone for the special bonus, but for everything he has done for us during the time we have been helping him develop the Conroe oil field. He has brought prosperity to Conroe and to us. We are grateful for his every kindness and we shall do everything in our power in the future to show our appreciation of the best boss a group of men ever had."

Treasured by Mr. Strake

This statement, accepted as an expression of the sentiment not only of the Strake crew, but of the whole Conroe region, was signed with the names of the following men, who composed the crew and who conceived the idea of buying newspaper space in order to tell what they thought about their boss: Harvey Lee, head driller; Charley Donovan, day driller; Ed LaCorse, night driller; Birt Donovan, night fireman; Bill Boles, roughneck and fireman; Alvin Rogers and Emmett Morgan, derrickmen; Dick Evans, Henry Duffy, Jim Graham and Otis Donovan, roughnecks. The unusual tribute, from 11 men who perhaps know him better than any other 11 men in the world, is treasured by Mr. Strake.

Harvey Lee had drilled in the discovery well, and Henry Duffy, Jim Graham, Charley Donovan and Bill Boles had worked on it.

The man who opened the Conroe Field started out to be a lawyer, but he changed his mind while a student in St. Louis University. Born in St. Louis, Mo., November 9, 1894, he went through the grade and high schools in that city and then entered the university. He was a baby when his father died. He was 9 years old when his mother followed. The financial resources of the family left behind were slender, and George worked during vacations to obtain the money necessary to keep himself in school. After a year and a half of a university course which contemplated graduation in law he switched to economics and philosophy, though he continued to study commercial law.

Young Strake's first job after leaving the university was in the office of a stock exchange commission house in St. Louis. Following this he was a claim agent for the Wells Fargo Express Co. and incidentally the youngest claim agent in the company's system. Then came employment as an auditor for a firm of certified public accountants. When the United States entered the World War the young man enlisted in the flying service, and he was within 30 days of receiving a commission as an officer in the aviation corps, with hopes of getting overseas, when the armistice was signed.

Why Not Try for a Prize Himself?

His work as an auditor had taken Mr. Strake to Tulsa, where his eyes were opened to the prizes offered by the oil industry. There he came in contact with men who had become wealthy through lucky strikes in oil. So upon receiving his discharge from the army he turned in the direction of the oil business and obtained a position as general auditor for the Mexican Gulf Petroleum Corp. in Mexico. Later he did both office and field work in the production department. Following this he worked for several independent companies in Mexico, getting experience in various branches of the oil business. While in Mexico he crossed the Rio Grande into San Antonio, Tex., from time to time and on one of these occasions he met Miss Susan Kehoe, of Houston, Tex., who was visiting there. In 1924 the two were married. The next year they went to Cuba, where Mr. Strake believed oil fields might be opened. Developments which he expected failed to materialize, and after a rather precarious existence of more than a year in the island Mr. and Mrs. Strake came back to the United States and settled in Houston, where they have resided since then.

Far from being dulled by his experience in Cuba, Mr. Strake's interest in the oil business and particularly in the possibilities offered the courageous wildcatter was keener than ever. He took up oil leases in East and South Texas and Louisiana. Two wildcat wells which he drilled proved dry holes and reduced his finances close to the vanishing point. He had a block of leases aggregating 9,500 acres in Montgomery County, Texas, and he made a careful study of the geology of the Lagarto-Reynosa contact there. He became convinced oil would reward the wildcatter. He tried to persuade large operating companies to drill, but geologists assigned to investigate the area brought back unfavorable reports.

Well, Then, He'd Drill One Himself

Mr. Strake's leases were about to expire. He tried without success to interest anybody from a major operator down to stenographers sufficiently to put money into a drilling venture with him. He was laughed at. Something would have to be done quickly if the leases were not to be forfeited, so in August, 1931, Mr. Strake decided to go ahead and start a well himself and "trust to God that his money would hold out."

Well, it did hold out. On August 30, 1931, one day before his leases would have expired, Mr. Strake spudded in his No. 1 on the South Texas Development Co. land. Anxious days followed. A serious fishing job, any one of the dozen villainously expensive things that can happen to a drilling well could turn this venture into black and final defeat. They would call it "Strake's Folly."

But none of the dark things which the Conroe pioneer envisaged happened, and on December 13 at a depth of 4,991 feet the well was brought in with an initial flow of 14,000,000 feet of wet gas and 100 bbls. of 55 gravity oil daily. The oil was an almost water-white distillate, containing about 90 per cent gasoline and 10 per cent kerosene.

Although this marked the end of the more serious troubles for the discoverer of the Conroe Field, irritating situations still remained to be overcome. Money needed to buy casing and other equipment for completion of the well had been obtained by selling some interests in the lease, but more was needed for development of the field and for getting the connections necessary for marketing the oil and gas which the discovery well was producing. Those who had scoffed at the idea of a commercially profitable well being drilled here were still unconvinced. It was a freak well, they said, and it would play out in a short time.

But It Was No Freak

For three months the well poured gas into the air, most of the time at the rate of 9,000,000 feet daily. In the course of time experienced oil men, who had been incredulous, conceded that the Strake No. 1 was not a freak well. The triumphant wildcatter incorporated the Strake Oil Corp. and in March, 1932, sold to the Humble Oil & Refining Co. 4,368 acres of leases, including the well drilled, for $3,500,000. Of this amount, according to published reports, $500,000 was in cash, with $3,000,000 to be paid out of the first oil produced and an overriding royalty.

The days of precarious outlook for G. W. Strake were over.

Following the Humble deal he sold a half interest in 1,100 odd acres to the Tide Water Oil Co. Development work now was under way by the Humble, the Tide Water, the Houston Oil Co., The Texas Company and other companies which had leases in the district and by Mr. Strake himself, who in addition to the

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Sometimes the Wildcatter Has the Last Laugh

The annals of oil are sprinkled with instances of pioneer operators who were subjected to shafts of skepticism ranging from good-natured chaffing to plain ridicule. The case of O. P. Taylor, whose wildcat well, the Triangle No. 1, opened the Allegany Field in New York, comes to mind. Mr. Taylor, coming from Virginia, had fought with the South in the Civil War, following which he established a cigar factory in Wellsville, N. Y.

—Photograph by Bachrach.
G. W. STRAKE

In McKean County, Pennsylvania, just across the state line, the Bradford Field was yielding riches. Mr. Taylor believed the oil pool or pools which had been tapped in the Bradford area extended northwestwardly into Allegany County, New York. With the aid of others whom he interested he drilled two test wells, each a dry hole. His faith remained unshaken, but that of his associates evaporated. He pointed out that early prospectors in the Bradford Field had met similar experiences. One of these had fastened to his derrick a proclamation reading, "Oil, Hell or China," and he had missed all three.

The Virginian's announced plan to drill a third test evoked derision. He must be mad. A few who caught something of the man's optimism agreed to stake him. As the hole deepened without signs of oil their enthusiasm waned. The tools needed repairs and Mr. Taylor could not raise enough money to send them to Bradford. His wife, who had sold her watch to buy food, gave him the needed cash. The tools were fixed, the well was completed and it opened the Allegany Field, famous in its day and starting the resolute Virginian on the road to fortune. It was his turn to laugh.

A.I.M.M.E. Stabilization Forum, Article No. 2; Reasons for, and Rules That Control the Forum

By EARL OLIVER

The American Institute of Mining and Metallurgical Engineers is a service institution. The service it renders is that of assisting in developing public knowledge on matters relating to mines and minerals. It is impartial and disintegrated. It is successful as an institution only to the extent it is successful in contributing knowledge that is related to the public welfare. It was established in 1871 and has numbered among its members the leading men of the world who were active in mining and metallurgical pursuits.

Its membership list reads like a roll of human achievements. Andrew Carnegie, Elbert H. Gary, Charles M. Schwab, William Boyce Thompson, Ferdinand Foch, Gelasio Caetani, Simon Guggenheim, August Heckscher, D. C. Jackling, A. Chester Beatty, Pope Yeatman, John Hays Hammond, George Otis Smith, H. Foster Bain, and Herbert Hoover, to mention a few of them, have helped in the past to mold history. Of these John Hays Hammond, Herbert Hoover and George Otis Smith each served a year or more as its president and H. Foster Bain served six years as its secretary. But it carries on. For instance George H. Dern, Lewis W. Douglas, and Sir John Cadman are helping to mold history in the immediate present.

The Institute has traditions to preserve. One of them is to seek for truth within the scope of its activities wherever it may be found and wherever it may lead. Another tradition is its preservation of the open forum. Through that agency is its contribution made.

Since its function is to serve society, its activities change as the needs of society change. During the era when society was turning toward the extensive use of minerals, activities of the institute were directed toward the development of knowledge regarding their discovery and utilization. Now that society is better served through conservation and equitable apportionment of its minerals, it would appear that the activities, interests and personnel of the institute would change accordingly. They are doing so.

The Sense to Find the Fit Place

Formerly the institute sought to discover what men as individuals could do with minerals. Now it seeks to discover what mankind collectively can do with them. Formerly the institute drew its contributions only from men versed in the science of minerals. Now it is also enlisting contributions from men versed in the science of government; for it is through the ordinary processes of government mankind must make its social readjustment if the chaos, strife and disorders that frequently accompany readjustments are to be avoided.

This attitude we are attempting to describe recently had a new word coined for it by a former president of the Geological Society of America. He called it "Eu-topo-tropism" and described it as "the sense to find the fit place." It places mankind on a slightly higher plane than was suggested by that earlier doctor of science who gave to the world the principle of the "survival of the fittest." We like to approach the subject from the viewpoint of Lane rather than from that of Darwin; but to our discomfort we learn that if we do not have "the sense to find the fit place" the law of the survival of the fittest will find it for us.

As we read after these two blazers of new trails, we are impressed that the present readjustment is not the only one the world has known, notwithstanding it is the only one we are much concerned about. We suspect, however, that this era of readjustment differs chiefly from those described by Darwin and Lane in that changes come a little more rapidly now than they did in those earlier periods.

We now discard in a moment ideas and institutions that have persisted for ages and which we thought were more or less permanent. To illustrate, the movies came and the world is rapidly abandoning its Victorian idea of culture and morals. The internal combustion engine came and the world discards age-old methods of locomotion. Paved roads came and horses and railroads both threaten to disappear. Machinery supplants labor so that we think man has been elevated, and wake up to discover instead that many are made jobless. We find means of producing foodstuffs and clothing in such quantities that millions of men, women and children are suffering for lack of them. Scientists discover new ways to find and produce oil, and the industry downs in a flood of it.

Forum of Outstanding Value

The accompanying article is the second of the series to be published in The Oil and Gas Journal as a part of the open forum arranged and sponsored by the Petroleum Stabilization Committee of the American Institute of Mining and Metallurgical Engineers. The first article appeared in the May 11 issue. The Stabilization Committee is comprised of recognized leaders of the legal fraternity, renowned economists, well-known engineers, outstanding oil company executives, and men who have gained the confidence of the public in general through their clear and fearless exposition of views relating to the public welfare. It is believed this forum, conducted through the columns of The Oil and Gas Journal, and presenting the views of these leaders of thought and others who desire to express opinions, will go a long way towards attainment of a common understanding of the problems confronting the petroleum industry and in removing whatever distrust may be in the minds of the public and those in official life towards methods which may be proposed to correct existing evils.

Can Man Control His Discoveries?

All these things originated in discoveries that were widely hailed as boons to mankind, but we find that their operation is not always beneficial. We pause to ask, is man a mere creature of circumstance or can he shape his own ends? Is he the master or the slave of the things he turns loose? Can he control that which he discovers, or is he only a builder of Frankensteins? Can he rise to the place described by Lane, or must he merely submit to the outlook as described by Darwin?

It is for such times as these that societies like the A.I.M.E. have their greatest usefulness. Some agencies in the fields of industry and morals must set the direction for the crowd. If that is not done, scientific discoveries and industrial developments destroy instead of build civilizations. Man must not only discover but he must control and direct, else that which he discovers will destroy him. He directs through developing public opinion. Nothing is more powerful than an idea when its hour has come.

But in this period of prolific discoveries individuals and companies acting alone in the development of public opinion are merely voices crying in the wilderness. United and organized they make a great force that can and does influence public action. Acting alone the individual produces only confusion and chaos and in the meantime civilization continues to drift. Drifting does not generally lead toward improvement. All this, we believe, explains and justifies the existence of scientific and professional societies, trade associations and civic clubs.

Equitable Control of Production

The great problem ahead of the world for some time is to evolve equitable types of production control in many industries, and especially is that true of the oil industry. Production control in this industry is as much an engineering function as is production development, notwithstanding it also involves the lawyer, the economist and the politician. It must be built on and around suitable engineering methods correlated to society's needs. It is engineering planning enforced by public opinion and legislation.

We believe the prerequisite to any satisfactory solution of the oil industry's ills is a vast educational campaign establishing a better public understanding of the needs and merits of production control. The underlying causes of the oil industry's ills are well known and generally agreed upon. In like manner there is general agreement among students of the industry that the first step toward their correction would be general adoption of oil field developing and operating methods; that would permit most efficient use of reservoir energy; that would provide equitable distribution of oil and gas among the several owners in the pool; and that would permit extraction of these products in response to market demand.

It is now found, however, that general adoption of such developing and operating methods unfortunately cannot be brought about without changes being secured in certain basic laws of oil and gas. These legal changes are difficult to secure because of the widespread fear that they would tend to place the oil industry more exclusively in the hands of the major oil companies, and that this will lead to increases in the price of petroleum products and in elimination from the industry of the company or individual with moderate or small financial means.

The consumer of petroleum products and the so-called "independents" in the industry so vastly outnumber the voting strength of the major oil companies that the required changes in the laws cannot be secured without a better public understanding of the issues involved and how they might be met without incurring the dangers above described. A familiar example of the difficulty in securing appropriate legislation is that of the recent Texas legislative effort on oil and gas, which is not unlike that constantly occurring in other legislative bodies—both state and Federal.

Public Must Understand

Perhaps no question existed in any quarter in Texas regarding the need of suitable oil and gas legislation. The state, the industry, consumer, labor, landowners, and society generally were suffering greatly because of its absence and no one profited by that absence. It seemed incredible before the effort was made that constructive legislation would not result. But the present situation in Texas is abundant evidence of the way not to evolve legislation.

Consideration of the spirit of democracy in American life operating under a form of government that permits every man or woman by his or her vote to register resentment or distrust in an effective manner, secretly and without fear of reaction, will make clear why the Texas legislative attempt failed to produce suitable oil and gas laws; and why any other similar effort will fail, in Texas or wherever voting is free, unless public understanding is de-

veloped as to what the issues are about, and confidence is established that liberty and rights of the individual are not being surrendered. Otherwise, legislation of the type proposed runs counter to prejudices that will defeat the undertaking—or result in compromises that are little better than the evils meant to be corrected.

It is clear that any legislation proposing a solution that might affect practically every inhabitant of this land through the price he or she pays for gasoline and other petroleum products; that might affect the freedom of action of the so-called independent oil man or oil company; that might modify the character of interest held by the vast multitudes of royalty owners, would have difficulty of passage under any circumstances unless its merits were understood. But when in addition it is misinterpreted as giving additional power to and for the benefit of great oil companies already vast in extent and in popular estimation wealthy beyond the dreams of avarice, then passage of the legislation becomes impossible—unless an understanding public sentiment can be developed.

Well Rounded Co-operative Action

And the public sentiment can only be developed through co-operative action—not merely of the great oil companies, but of the consumers and government officials and scientists, and independent operators and royalty owners and others who know the problem and the price society is paying for the present unsound methods of development. With such co-operative action well organized, we believe an understanding public sentiment can be developed. And certainly issues at stake justify the attempt. However, any such movement, to be successful, must be taken out of the realm of group promotion and placed in the broader field of benefits to society generally before all the necessary influences can be organized behind it.

Forum Program

The greatest service the American Institute of Mining and Metallurgical Engineers can render today is the development of the public thinking regarding readjustment methods in social relationships. It was in that spirit the institute set up its Petroleum Stabilization Committee.

Stabilization is not merely a mechanical engineering problem. It involves social engineering, by which we do not mean it is possible or even desirable to change the nature of men but rather that it is possible to set up procedure that will avoid causing them to clash. Stabilization comprehends consideration of the mechanical details of production methods that are clearly within the field of the engineer; but it considers them only in their relation to distribution, utilization and control of oil and gas in harmony with philosophies that motivate men and shape current conceptions of rights and wrongs, or of justice and injustice if those terms be deemed more acceptable.

The American Institute of Mining and Metallurgical Engineers makes its contribution of this character to society through the development and organization of open forum discussions. It selects matters of public interest for discussion. It organizes the discussions so as to clearly define the issues involved. It selects men to lead in the discussions who are best qualified to analyze them intelligently and impartially.

In setting up an oil industry stabilization committee the petroleum division has attempted to follow those traditions. It has selected men from the oil industry of recognized standing and ability who are acquainted with the mechanics of petroleum production and distribution. It has also placed on the committee men nationally and internationally recognized for their knowledge of the science of government. It has, therefore, secured the best talent available to lead in the discussion of the oil industry's stabilization problems.

Four Outstanding Objectives

In the determination of issues for discussion it has discovered a widespread belief that the establishment of stabilization in the petroleum industry is dependent upon consummating four outstanding objectives, namely:

1. Balancing supply and demand.
2. Developing greatest recovery at lowest cost.
3. Establishing an equitable standard of ownership rights.
4. Preserving ownership control.

These are the objectives that have been selected for open forum discussion by the stabilization committee.

In the conduct of open forums during the past history of the institute the practice has ordinarily been to have the discussions take place between participants who have come together for that purpose with the result of their discussions thereafter made common knowledge through publication of proceedings. Changing methods, however, come with changing conditions. It is difficult to bring together a committee composed of men so widely scattered in their residences and in their activities as are the men of this committee. An attempt will, therefore, be made to accomplish substantially the same result by bringing together their thoughts and contributions. The Oil and Gas Journal has kindly granted the use of its columns for that purpose and is willing to co-operate in every reasonable manner to make this A.I.M.E. forum so conducted a successful one.

The participants in this open forum discussion will consist: First, of members of the stabilization committee; second, of other specialists qualified and solicited to make some peculiar contribution to the discussion; third, of anyone who desires to be heard and who will conform to the rules under which the forum is conducted.

Rules That Will Control the Forum

It is obvious no effective study can be developed without adherence to some organized method. Such method will be applied in this instance and it will be applied equally to all three groups of contributors.

It is proposed first to assemble all pertinent facts relating to the four objectives named and to study each objective apart from the others. After the four objectives are studied consecutively they will be studied in their interrelationships. When the groundwork is fairly well prepared through the assembling of facts and basic principles from every available source, we hope to have these various facts and principles integrated and synthesized by Messrs. Pound, Bates, Marshall, Ely, Leith and other members of the committee who have demonstrated ability of that order and whose perspective will not be distorted by personal interests involved.

To initiate the study we propose having one or more lead articles on each of the objectives, which lead articles will be devoted to analyzing the objective and perhaps will present a definite propsal regarding it. The article will then be open for discussion in that and later issues of The Oil and Gas Journal. As stated, comments on it will be welcomed from anyone who desires to be heard on the subject.

The institute is not concerned regarding the viewpoint of the contributor provided only that the contribution is constructive in its nature and adheres to reasonable rules of presentation. Articles will be published from week to week as material is available. We hope to confine each week's discussion to a maximum of 4,000 words, which is normally two pages in The Oil and Gas Journal. As many weeks as may be found desirable will be devoted toward each of the four objectives. Comment will be published under the name of its author and may be of any length the author finds desirable, ranging between a minimum of 50 words or less to a maximum of 4,000 words. The comment will not be utilized, however, unless it is:

1. Directed toward and confined to the subject assigned for discussion.
2. Constructive.
3. Comprehensive but condensed.
4. Analytically and orderly presented.

It must harmonize with the spirit and purpose of the study which is to point out some practical method of stabilizing the oil industry. Material will be selected for use as against other material, based on its measuring up to the qualifications above set forth.

This method of conducting an open forum is frankly an experiment. New rules and regulations may be imposed from time to time, or the series may be discontinued or modified as experience derived from the study indicates is wise. In any event the outstanding objective will be to provide a free, frank, open and impartial forum for the expression of all and any views pertinent to the subject that are designed to be constructive.

Orgy in East Texas Has Shortened Flowing Life

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production the water from the repressuring reservoir would have moved into the sand from the west at a regular rate. This rate of movement would depend upon the differentials of pressure between reservoir and hydrostatic pressure of the water.

Careful estimate of this rate of water movement has shown that at 1,374 pounds pressure in the reservoir will permit 282,000 bbls. of oil to be withdrawn daily without any drop in bottom hole pressure. By the same illustration applied to the battery of tanks if they had all been kept at equal pressures by a regulated rate of withdrawal the water would have flowed evenly and equally to each of the tanks in the battery.

Unfortunately the East Texas Field has not been treated as a unit at any time and the spacing of wells has been by no means uniform. Flow strings are not uniform in size or design and the penetration into the production horizon has varied from 3 to over 100 feet.

These variations in details of wells have created great differences in production conditions in the various areas. A study of data secured in this field recently by U. S. Bureau of Mines engineers and others has shown that wells have widely different production-pressure drops. That is the amount of oil that can be produced per hour from any well with a drop in pressure to its flowing pressure limit will be by no means uniform.

This study of production-pressure drop shows that wells in the Joinerville area, the oldest in the field and having thin sand sections, will not produce over 25 or 30 bbls. per hour without lowering their bottom hole pressure to the flowing limit. Wells in the water area in the Gladewater district will make about 100 bbls. per hour before their flowing pressure limit is reached and other wells located in the north end of the field upon a high point on the structure with deep sand penetration will flow 150 bbls. per hour with a drop in pressure of only from 28 to 50 pounds.

These last described wells would be able to flow several thousands of barrels of oil per hour if their flow string capacity is great enough before their bottom hole pressure would drop to the limit of flow conditions.

This hourly flowing rate is not to be confused with the time period during which the wells would continue to produce. It requires energy to lift the oil from the bottom to the top of the well. Energy is also necessary to deliver the oil to the bottom of the hole. The more rapidly the oil is produced the greater the amount of energy needed to handle it.

Energy Rate

This energy demand can be illustrated by considering the problem of lifting 100 pounds at the rate of 100 feet per minute and then lifting the same weight at 1,000 feet per minute. The latter rate of lift will require 10 times as much energy as the former.

While this simple illustration does not exactly illustrate flowing conditions in East Texas it is near enough to bring out the point under consideration. There is a pressure drop across the sand body for any rate of production and this pressure drop is the determining feature in arriving at a well's capacity to deliver oil.

If the energy available is used up in a short time to get out all the oil possible the flowing period of that well will be comparatively short.

That is the main thing that has happened in East Texas during its life. Energy has not been conserved. Some wells have drawn more than their share from the common supply. Some had a great deal more energy available to the individual well than others because of structural position, porosity and permeability of sand, proximity of water for repressuring and other factors.

After each period of high production rate there has followed a period of shutdown to some extent and during that period the water movement has been able to repressure the depleted sands to some extent.

But every time high rate of flow has been established more and more of the reserve energy of the field has been depleted until now the whole field is rapidly approaching that stage of reserve energy when only a comparatively small portion of the original energy is left in some areas.

It is therefore impossible to classify the flowing life of the field as a whole because of these variables, but it is very evident that large areas are rapidly approaching the condition when the wells will only flow for two or three hours at a time. Other areas have wells that will not start to flow by natural means when they have been shut in for a time and the gas in solution has drained off.

Such wells build up a fluid column greater than the bottom hole pressure

and must be brought back on production by swabbing off a portion of this column of dead oil or blowing it off by injecting gas under pressure. Wells of this type are rapidly increasing, indicating very clearly that the reserve energy in the field has been depleted to the point where repressuring is taking more time to accomplish.

Some wells will not flow when the bottom hole pressure is below 1,200 pounds and others will continue to flow with a bottom hole pressure of only 500 pounds. These condition will divide the field into groups of wells that will have to be put on mechanical production at different stages in their life.

Capacity of Pumping Wells

Many have maintained that the East Texas Field will deliver better than 100 bbls. per well per day when the pumping stage is reached. This is a generalized statement and cannot be taken too literally. It has been proven that many wells in the pumping areas ceased to secure any oil at bottom hole pressures of around 700 pounds. Others have had a difficult time in securing 20 or 25 bbls. per day by pumping. Others with water in the hole have flowed as much as 60 per cent water and 40 per cent oil but with an increase in the amount of water have had to be pumped.

It is therefore impossible to anticipate how much wells in East Texas will produce on the pump, but one thing is very certain that it will cost a great deal more to produce them by pumping than it has cost to get the oil by open flow. When any appreciable number of wells are forced to mechanical means of production there will be a great enough increase in production costs to bring about one or two things. The wells must be abandoned because the oil costs too much to produce, or a higher price must be paid for all the oil in the field.

Another inequality will be set up when any appreciable number of wells are forced to use mechanical means of production. The pumpers will not be able to get as much oil as the flowing wells and any order issued by the Railroad Commission of Texas will have to take this into account.

The marginal well law sets the pumping limit for East Texas at 20 bbls. per well. If flowing wells can get appreciably greater amounts of oil at lower costs they will be produced at their capacities and this will tend to drain the oil into them and the energy so used will not be available to drive the oil into areas of low pressure located at more distance from the flowing wells.

It has been stated that the drainage area of an East Texas well is within a circle 300 feet radius. If this is a fact, within reasonable limits due to other factors of drainage, and the differential in pressures between the bottom of the well and the drainage area is sufficient the oil will tend to flow to the nearest exit. Under such a condition the pumping well would not gain much oil by transfer of reservoir energy because the total available energy in the whole area at such a time will be but little above that necessary to deliver and produce the oil through the flowing well. Some oil might tend to move toward the pumper because at that point there will exist a lower pressure than around the flowing well but not a great enough differential to create marked flow conditions.

Conditions Not Uniform

The main thing to be borne in mind in considering this field is that there is no one answer to all of its problems. If it had been carefully conserved through its past life it would have continued to produce oil for many years to come by natural energy. But as carefully compiled data have proven without a question that the manner of past production has been such as to move the oil out of the reservoir at a much higher rate than the water repressuring could take place the field is now rapidly approaching that point in its life when the remaining portion of the original stored energy within the numerous sand bodies is about dissipated.

Again considering the battery of tanks. If equal pressures had been maintained upon them at all times and the rate of oil and gas withdrawal had been so regulated as to maintain a constant drop in pressure within each individual tank in the entire system the reserve energy to drive all of the oil out of the vertical flow pipe could have been supplied by the water from the reservoir so placed as to provide a hydrostatic pressure upon the water system.

As this regulated pressure drop has not been held constant in the East Texas Field and the total amount of oil withdrawn from the field at all times has been greater than the rate of water movement into the reservoir from the west great inequalities of underground conditions have been created and those inequalities will now soon begin to make themselves apparent in the various wells in this field.

The warning of such a condition has been given several times in the past and engineers have testified before the commission on many occasions that the East Texas Field was capable of economically producing about 325,000 bbls. of oil per day with the greatest ultimate recovery. Such a system of production would have resulted in true conservation because it would have resulted in the minimum amount of oil being left in the formation.

Repressuring Rate

If this field is again shut in for a period it is believed that pressures will again build up around the wells because the water will have time to catch up with the oil withdrawal. At the rate of recent production of over 1,000,000 bbls. per day the rate of oil movement has been about three and one-half times more rapid than the rate of water movement through the sand with the average field bottom hole pressure of 1,374 pounds.

As the field has produced at this high rate for about nine days since the 1,374-pound pressure was established it will follow that it must be shut in for about 30 days to permit pressures to approximately equalize.

If the field had been allowed to produce at an average rate of 350,000 bbls. per day for 39 days it would have delivered 13,650,000 bbls. of oil into the tanks. Producing at a rate of about 1,000,000 bbls. per day it has delivered about 10,000,000 bbls. in nine days. These 10,000,000 bbls. of oil have been removed at such a high rate that the pressure drop per million barrels of oil extracted has been about 6 pounds, where the pressure drop per million barrels under 350,000 bbls. daily allowable has been less than 1 pound.

This indicates that 5 pounds of energy per million barrels of oil has been used unnecessarily in getting this oil in a hurry. Prices have been reduced from 52 cents to 10 and 25 cents per barrel and the natural flowing life of the field has been shortened appreciably. To recover future oil by mechanical means will greatly exceed the profit to be made by buying 10,000,000 bbls. of oil at 25 cents per barrel even though the future price of this stored oil may go to 75 cents or $1 per barrel.

The lost energy from the reservoir caused by the rapid production of this oil can never be made up and it is going to be necessary to spend a large sum of money to provide the wells with mechanical production equipment and then pay the cost of operating it. It has been estimated by conservative engineers that it will cost from 50 to 75 cents per barrel to produce East Texas oil by mechanical means if all costs are taken into consideration and the life of the field is 10 years.

Governor Ferguson May Veto Measure Levying New $8,000,000 Tax on Oil

AUSTIN, Tex., May 16.—Members of the Texas legislature disclosed Tuesday they had information that Governor Miriam A. Ferguson will veto the $8,000,000 new tax on oil production and oil pipe lines recently passed. They were informed the veto will be on the contention that the intangible tax on pipe lines is unconstitutional.

Plans were being made in the house and senate to attempt passing the bill over the veto. The pipe lines were under the intangible tax system until 1907. This is the only important new tax measure passed at this session.

Those representing oil districts made no effort in the house to head off the heavy tax bill. It was believed enactment of this measure would prevent consideration of a pending bill for the divorcement of oil pipe lines from the producing, refining or marketing ends of the industry.

The house concurred, by a vote of 95 to 20, in the senate's amendments that brought all oil pipe lines under the state intangible tax law, and which changed the original Daniel graduated oil tax bill to a 2-cent per barrel minimum tax, retaining the 2 per cent oil tax when the price is above $1 per barrel. The senate had passed the bill with these changes, 27 to 4.

The measure is effective 90 days after adjournment. It lacked only five house votes of making it immediately effective, giving the State $750,000 a month additional revenue.

This bill was one of three considered during the day affecting oil and gas. The house adopted an amendment by Representative Sarah T. Hughes denying to oil companies the two years' time, provided in a conference report, to pay the state bonuses due on oil lease lands, as authorized in the Wagstaff West Texas land bill.

The other bill was called up by Representative Cecil Lotief to prohibit gas companies from discriminating in price or rates between different communities with or without competitive service.

The oil and pipe line tax bill was one of the most important and biggest in amount of new revenue ever passed by the legislature. It quadrupled the present 2 per cent tax on oil on a 25-cent price basis. Present oil revenues, on an average annual price of between 50 and 75 cents, is $4,000,000. This bill increased the production tax $4,000,000, and Representative Albert K. Daniel, original author, estimated the intangible levy on pipe lines will raise even more than the increased production tax.

The intangible levy now applies to railroads. It allows the pipe lines a net return of 10 per cent on investment, then capitalizes other earnings on a 6 per cent basis and spreads the capitalization at full rates on the county and state tax rolls for application of the entire ad valorem tax rate of both State and counties.

"This bill will add one billion dollars of new property to state and county assessment rolls," Representative Daniel predicted.

FAVOR PRODUCTION REGULATION

SAN ANTONIO, Tex., May 15.—About 60 or more operators met in the San Antonio Petroleum Club rooms in the Alamo National Bank Building Saturday night, called to order by P. H. Swearingen to discuss pending legislative measures. A resolution was offered by Al Buchanan favoring Federal regulation of oil production in Texas. An amendment offered by R. F. Schoolfield amending it to include an endorsement of the divorcement of pipe lines was voted down by a vote of 21 to 16, and the Buchanan resolution was then adopted nearly unanimously.

Wildcatters Getting Busy in the Gulf Coast Area

(Continued from Page 14)

Most of this is virgin or semivirgin territory and a large part of it has been leased chiefly because it happens to be located along that trend but there are a number of promising blocks which will be drilled. However, across southern Tyler and northern Hardin Counties and Jasper and Newton Counties, Republic Production Co. and Houston Oil Co. own approximately 500,000 acres in fee, land which has been held by these companies many years and consequently there will be no promiscuous wildcatting on any scale along the trend in those counties.

The latter companies, however, are carrying on syatematic development of their Spurger block in eastern Tyler County where one well was completed some time ago. Four dry holes have been drilled since then fairly well defining the area to the north, west and southwest. It has been expected that production, if any, would be toward the southeast and a test now is drilling in that direction.

Beauregard Parish, just across the Texas line in Louisiana, holds promise of considerable activity. Although a little quiet just now, much leasing and geophysical work was being done up until about a couple of months ago and a number of wildcats started drilling. None of these made much hole and at present all are standing but it is anticipated things will open up before long.

One of the most recent leasing and royalty plays has been in the extreme south corner of San Jacinto County where the latter county makes a notch into Montgomery County. This is centered around the Sam Lusk Survey and was initiated by the Shell Petroleum Corp. although Gulf Production Co., Sun Oil Co. and others have gone into the area, paying as high as $25 and $35 per acre. The area, which was worked geophysically and seems to have a little surface indication, is a little less than 15 miles east of the Conroe Field. A number of important blocks have been taken in San Jacinto County since the Conroe Field was opened. This leasing also has been taking in northern Liberty County although there has been spasmodic plays going on there for some time.

Drilling West of Tomball

In the northwest part of Harris County, about 10 miles west of the Tomball play, Sinclair Prairie Oil Co. is starting drilling in its first deep test on its 6,000-acre block recently taken centering in the Jesse Denton Survey. Northwest Harris County, north and west of the Hockley Dome and the area extending westward along the trend into Waller County has been the center of an important lease and royalty play for several months and other drilling probably will be started this year.

Farther north in Grimes County there is promise of some interesting development. In that county several prospects have been looked upon with favor although so far there has been no extensive drilling. Two new tests, however, now are being started, one by Coch and associates on the Yarborough which has been leased by Pure Oil Co., and the other on the old Carlos salt dome prospect.

In Austin County, which is westward along the trend, the area southwest of Bellville and about 10 to 15 miles southwest of the Raccoon Bend Field, has been figuring chiefly in wildcat exploration. Cranfill-Reynolds Co. now is on its second test on its block owned jointly with the Caracus Petroleum Co. of Venezuela. On a block west of this, Sun Oil Co. drilled a dry hole. This wildcatting so far has been disappointing with the tests running about normal.

Three wildcats are drilling in the Garwood area of southern Colorado County where Coyle-Concord Oil Co. last year brought in a wet gas well. The area generally has been looked upon as being of considerable importance and due for much drilling exploration in view of the possibility of open oil production. The three tests under way have been disappointing in that all have gone well below the

OUTSTANDING STRENGTH

The Directors of the National Bank of Tulsa announce the election of the following new members to the directorate of this bank: « « « « «

National BANK OF TULSA

CAPITAL RESOURCES
$8,000,000

* * *

*Preferred Capital
$4,000,000

Common Capital
$2,000,000

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MR. CHARLES J. WRIGHTSMAN
Independent Oil Producer

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horison in which the Coyle-Concord well was completed and without showing up anything of consequence, but this is not expected to stop further drilling in that territory. The Coyle-Concord well has been such as to indicate that a sizable field exists in that district and exploration will be carried on until it is found.

Wharton County, just south of Colorado County, has been and still is much in the spotlight. Two new fields are in the making, one at Louise, in the southwestern part of the county, and the other at Little Prairie, north of El Campo. At Louise, a geophysical salt dome prospect, Pure Oil Co.'s No. 1 Stewart, encountered good oil showings from 5,960 feet to around 6,200 feet and probably could have made a good well, operators believe, but the test is being carried on deeper as an exploration test. At Little Prairie, a Shell Petroleum Corp. geophysical prospect, Smith and associates' No. 1 Mitchell has been standing cemented at 3,250 feet, where it is expected to be completed as a gas well to supply fuel for further development. This test, which passed up these shallow sands at 3,064-3,121 feet and 3,170-3,203 feet, drilled to a total depth of 6,875 feet after finding additional deep showings but heaving shale prevented testing at those levels or further drilling and the hole was plugged to its present depth.

There are a half dozen geophysical prospects in Wharton County which will necessitate further drilling. On each of these a deep test has been drilled within the past year but none can be condemned by one wildcat. Just across the Wharton County line on the west at Ganado in Jackson County, Turnbull and associates have started drilling the first test on a geophysical block worked and leased several years ago by Shell Petroleum Corp., Humble Oil & Refining Co. and Gulf Production Co.

Throughout the salt dome district of the Gulf Coast there are many geophysical prospects, some of which have been under lease for several years and others which have recently been released or newly worked and blocked, on which little or no drilling has ever been done. While the majority of these are in the hands of the larger companies which own the entire acreage on each individually or on a jointly owned basis which will forestall any active wildcat exploration on them, yet each represents new drilling operations and on many of these some exploration probably will be conducted before the end of this year Within the past several weeks first tests have been started on several of these.

The Texas salt dome prospects are expected to attract most of the new drilling for the time being although within the past six months considerable interest has been attached to the exploration for new prospects in southern Louisiana. South Louisiana has not been reflecting the active drilling which has been going on in Texas but the long string of prospects which have been worked and taken up in coastal Louisiana offer a substantial reserve for future exploration.

Oil Well Among the Early Supply Houses in Canada

In the list of supply houses serving the Turner Valley Field in Alberta, Canada, published by The Oil and Gas Journal in its issue of April 27, 1933, the name of the Oil Well Supply Co. was inadvertently omitted. This company was among the earliest of the major supply concerns established in Canada. It has an office, store and warehouse in Okotoks, in the Turner Valley territory, and also has an office in the city of Calgary.

NATIONAL SCOUTS ASSOCIATION

SAN ANTONIO, Tex., May 15.—About 200 are in attendance at the annual convention of National Oil Scouts Association in the Plaza Hotel. Three are prominently mentioned as possible president of the association for next year: Claude A. Strahan of Atlantic Oil Production Co. at Shreveport, La.; Tom Terry of The Texas Company at San Antonio, and Jesse Bullard of Shell Petroleum Corp. at San Antonio.

Railroad Lines Give Reduced Fares for Those Attending Houston Oil Show

Reduced railroad fares have been provided for those attending the Oil Equipment and Engineering Exposition to be held in Houston, Tex., from May 22 to 28, 1933. Reduced fare tickets will be sold from May 19 to 25, inclusive. The return limit is 30 days in addition to the rate of sale, and the reduction will apply from all points in Arkansas, Kansas, Missouri and Oklahoma; also Memphis, Tenn., Natches, Miss., and Vicksburg, Miss. Identification certificates will be issued through the Southwestern Passenger Association office bearing the facsimile signature of E. G. Lenzner, Rice Hotel, Houston. Tickets must be stamped by the railroad agent before boarding the train.

Attendance at the exposition will be from the entire Texas and Mid-Continent territories, from California, eastern oil-producing states and from foreign countries. The equipment on display will cover every branch of the petroleum industry—drilling, production, refining, pipe line, natural gasoline manufacture and marketing. Complimentary tickets will be supplied to all who are connected with any of these branches of the industry.

Final plans for the exposition are about complete with many of the exhibits already in place for the opening. A steel derrick on display in front of the Convention Hall where the oil show is to be held will form part of the outside exhibition. Within the building will be both moving and stationary displays to show the construction and operation of tools and machinery.

Wichita Falls Meeting Blames State Officials

WICHITA FALLS, Tex., May 13.—Distressed conditions in the oil business are directly due to failure of the administration officers of the State—the railroad commission and the attorney general—to intelligently and conservatively enforce the State's conservation laws, it was disclosed by a mass meeting called jointly by the Wichita Falls Chamber of Commerce, the Wichita Falls Retail Merchants Association and the North Texas Oil and Gas Association.

The resolutions adopted follow:

"Whereas, the oil industry is the largest in the State of Texas, and more than 500,000 persons, or approximately 1 out of every 12, are directly dependent upon it for a livelihood, and from this source the State obtains over one-half of its revenue by way of taxes, and

"Whereas, prosperity can not return to this State, or to this nation unless so important an industry is likewise prospering, and when the men engaged in this important industry are operating at losses, the farmers, merchants, stockmen and all other business and professional men can not expect to operate at a profit, because of the fact that the welfare of all essential industries depend on each other, and

"Whereas, when any industry is operating at a loss, the laborers in all industries feel the effect of the loss through necessary cuts in wages, and

"Whereas, the present deplorable condition in the oil industry is directly due to the lack of proper control of production in the State of Texas, and this lack of proper control is directly due to the failure of the administrative officers of Texas, namely the railroad commission and the attorney general, intelligently and conscientiously to use the powers conferred upon them by the legislature, as evidenced by their present order allowing 800,000 bbls. to East Texas and over 500,000 to the rest of the State, when the total market demand from Texas is only 786,000 bbls.; therefore, be it

"Resolved, that we condemn and deplore the failure of our attorney general and our railroad commission to conscientiously, dilligently and intelligently exercise their own powers to bring the production of oil in Texas within the limits of market demand for such oil. We likewise deplore and condemn the action of less than 10 per cent of the people engaged in the oil business in Texas in contributing to the chaotic condition, for their own selfish purposes. We likewise deplore and condemn the action of our public officials and this selfish minority in the oil business for their failure to support our President in his earnest and honest effort to bring about prosperous conditions in all industries, be it further

"Resolved, that we earnestly and respectfully request our attorney general and our railroad commission, immediately to prepare, promulgate and enforce a valid order limiting the production of oil in Texas to 800,000 bbls., the present market demand, and to stop the overproduction of petroleum in Texas, to the end that stabilization and prosperity may return to this great industry, and through it, to all industries and all laborers and business men dependent upon industry."

The principal address was made by J. S. Bridwell, president of the North Texas Oil and Gas Association, who said that while from 97 to 99 per cent of Texas independents want proration, the enforcement authorities have pursued policies advocated by the small minority opposing it.

"Our attorney general told us the violators were not violators but red-blooded American citizens fighting for their rights. Yes, and so are the bootleggers and everyone else who violates the law."

The resolutions were adopted without a dissenting vote after speeches by several others, including John E. Kilgore, attorney, who charged the commission with creating waste under the guise of an order designed to prevent this.

Jake Sandefer, president of the West Central Texas Oil and Gas Association, spoke and Burton A. Stayton, Wichita Falls business man, pointed out that "the gears have been stripped in the oil industry and all our businesses have been affected." The desperate plight not only of the producer, but also of the business man under present oil prices was emphasized by several speakers.

Copies of the resolution were passed after the meeting to obtain signatures.

May Include Oil in the Industrial Agreement Bill

(Continued from Page 13)

ceipts of all units of industry, whether engaged in interstate or merely in intrastate commerce. There would be a provision whereby perhaps as much as 90 per cent of the tax would be remitted in the case of all units complying with the provisions of the control of industry features.

This would leave the units not affiliated with a national trade organization or otherwise subscribing to its tenents bearing the full burden of the tax.

"Upon its own motion, or if complaint is made to the board that abuses inimical to the public interest and contrary to the policies herein declared are prevalent in any trade or industry or subdivision thereof, and if no code of trade practice therefore has theretofore been approved by the board, the board, if it deems it advisable, may determine that a code of trade practice should be established therefor and shall thereupon publish reasonable notice of its determination."

The adoption of these codes virtually will be made compulsory for if within the time specified by the board in its notice a code of trade practice has not been prepared and submitted to the board, or the board finds any code transmitted to it shall not be in accordance with the declared policy of the proposed legislation, it may cause a hearing to be held in the matter, and it may by order prescribe a code of trade practice approved by the board.

The code is defined as "(1) any agreement between the members of a trade or industrial association or group, or between any such associations or groups, as are fairly representative of the trade or industry or subdivision thereof, relating to the methods of conducting business to be followed by the parties to such agreement or by the members of the associations and groups represented in respect of terms or conditions of competition, labor standards, selling, purchasing and credit practices, production schedules, control of productive capacity, and other trade or industrial conditions, and (2) any action prescribed by the board 'in compelling the acceptance of a code'."

Antitrust Exemption

The present purpose is to limit the life of the proposed legislation to two years, but an additional 60 days of grace would be allowed during which thereafter those complying with the provisions of codes shall be exempt from the provisions of the antitrust laws.

Two or more independently competent persons engaged in a tr[illegible] industry, or one or more trade or [illegible] associations or groups, would be permitted to file with the board for approval an agreement or agreements (other than a code or code of trade practice); approval by the board would be conditioned upon its finding (1) that any such pact will tend toward the economic improvement of the trade or industry affected thereby, and will tend to increase substantially the number of persons employed in the trade or industry or will otherwise tend to absorb and relieve unemployment, or (2) that the trade or industry affected by such agreement or agreements is in a condition of distress and that in view of the emergency recognized in the declaration of policy, it is in the public interest to sanction the same for the purpose of reorganizing and/or rehabilitating such trade or industry.

The board would require reports and the keeping of accounts and would impose such safeguards to protect consumers, competitors, employes and others as it may deem desirable.

The records of meetings incident to the adoption and administration of any code would be open to inspection by the board or its representatives.

Upon the request of the board, the Federal Trade Commission would be required to make such investigations as may be necessary to enable the former to carry out the legislation.

Benefits Expected

Benefits expected to flow from the trade practice agreements and the immunities proposed would be withheld unless there is compliance.

"The provisions, including penalties, of Sections 8, 9 and 10 of the Federal Trade Commission Act, as amended are made applicable to the jurisdiction, powers, and duties of the board in administering the provisions of this title and to any person subject to the provisions of this title, whether or not a corporation."

Appeals for review of any order of the board could be taken to the Supreme Court of the District of Columbia by any interested person. That court would be empowered to take testimony to determine whether a code or agreement will in actual operation tend to accomplish the objects and purposes for which intended. The findings and conclusions of the board would, however, in any such proceedings, be deemed prima facie evidence of the facts therein recited, and in any such proceeding the court could affirm or vacate, modify, or annul the order of the board.

Sensible cracking

QUESTION: Why such effort to make high anti-knock gasoline?

ANSWER: Because motorists want it—sell high anti-knock gasoline and you can get a bigger share of the business

QUESTION: What is the best way to make the good anti-knock gasoline that the public wants?

ANSWER: By Dubbs cracking, because Dubbs cracking makes the biggest yield of the best anti-knock gasoline from any stock—at lowest cost—royalty and all

Dubbs cracking is more than wise cracking—it is sensible cracking

Universal Oil Products Co
Chicago Illinois

Dubbs Cracking Process
Owner and Licensor

THE OIL AND GAS JOURNAL

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Out of the Depths

The oil outlook is improving after reaching a stage where any change must be for the better.

Ten-cent oil in East Texas was of course impossible for any length of time. A quarter a barrel is only relatively less impractical. It cannot last.

The threat of government taking over the industry which appeared for a time so imminent that most people expected it is now receding.

The order allowing East Texas to produce twice as much as the demand at a half dollar a barrel may, after all, prove to be a blessing in disguise, so far as the oil industry is concerned.

The decline in pressures during May since the new order took off the lid has been more than twice as much as the decline in pressure per million barrels since the opening of the field up to May.

Each day that order remains in effect is hastening the arrival of the pumping stage which will remove East Texas as a menace to the industry. If the commission had designed to solve the problem of proration by abolishing the need for it, it could not have done better.

Of course there will still be a lot of oil left in East Texas but it will not be dime oil or even quarter oil. The come easy-go easy days for the price cutters are nearing an end.

The tens of millions of dollars required to put East Texas on the pump will not be at the mercy of peddlers of flush production. East Texas oil thereafter will have to reflect the cost of production.

The industry will not have to wait until that day is actually here to see an improvement in the price structure. The certainty of declining and more costly production will be anticipated in the market, as it always has been in any community.

So, as far as East Texas is concerned its measure is being taken. Oil men are beginning to look beyond it to a better day, convinced that it will not be long delayed.

It has been this realization, as much as anything, that has caused the revulsion of feeling from an attitude of deep despair that was turning to government control as the only remedy. Oil men who, two weeks ago, saw no other way out are now not only questioning but opposing the idea of outside dictatorship.

East Texas was phenomenal in size, productivity, ease of drilling and difficulty of control. Before another such field, if ever, is encountered the industry hopes to have the means of dealing with it.

To that end it must have greater freedom in solving its problems. It must no longer be handicapped in dealing with destructive competition fastened upon it by outworn tradition and outgrown restraints.

The law of capture is as out of date as witchcraft. It is as immoral as it is wasteful. It legalizes theft. It dissipates the energy needed to assure the most economical and most efficient recovery of oil. It puts a premium on destructive competition, forcing production when it is a drug on the market and plunging the industry into depression.

The industry should be encouraged to united action in promoting scientific development, in establishing the rights of each owner in a common pool, in assuring the utmost utilization of natural energy and in avoiding wasteful overproduction.

Oil production is a business and should not be made a grab game by antediluvian legal conceptions long ago disproved by practical experience.

But the production division is not the only branch of the oil industry suffering from legal handicaps. In common with industry generally it has been restricted in dealing with economic facts by obstructive theories.

No matter how convinced an overwhelming majority of the industry may be of the necessity for a policy in the interest of both the consuming public and of the industry it has been deterred from tackling the difficulty by the threat of antitrust prosecution.

The code of ethics for the marketing of petroleum products, although approved by the Federal Trade Commission, has never had a fair chance because of this overhanging threat. Abuses that were clearly recognized as injurious to both the industry and the consumer and that could have been swept away by united action have kept the industry in a state of turmoil, encouraging the growth of tax evasion, price cutting and bootlegging.

While a legal fiction has spurred wasteful overproduction of crude, an economic fiction embodied in the statutes has promoted distress disposal of petroleum products, besetting the industry at both ends.

Fortunately, the recent decision of the United States Supreme Court in the Appalachian Coals case punctured the theory of competition being the life of trade, showing that when carried to destructive lengths it is instead the death of trade.

The same conclusion has forced itself upon the attention of the administration at Washington, judging by the reported drafts of the industry recovery bill, which proposes to lift the antitrust inhibitions for a period of two years until the country gets out of the depression.

The bill proposes that trade associations be encouraged for the government of industries with provisions to make the policy of the majority effective through government assistance against obstructive minorities.

Limiting trade associations to the mere collection of statistics as in the past has been ineffective, because, no matter how plain the lesson of the figures might be, those who wilfully ignored them could "run" the danger signals and ditch the whole industry.

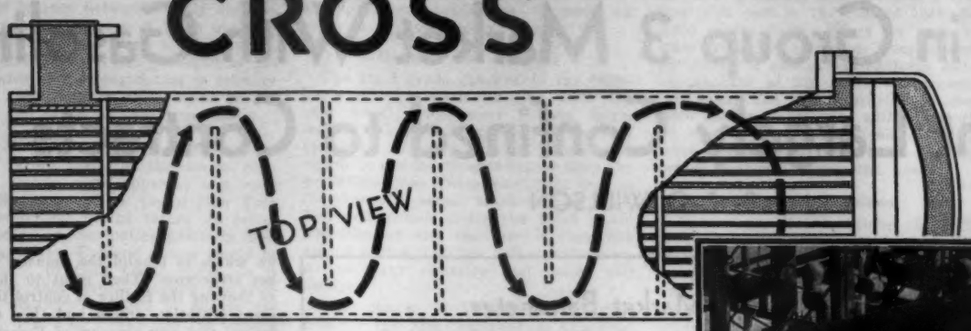
Reports from Washington indicate the oil industry would be included under this bill rather than having a separate law for an oil dictatorship. The bill is reported to be still under consideration at the White House and its ultimate provisions are not yet definitely known.

The advance reports as to antitrust administration and the fostering of trade associations for self-government of industry can be better valued when the control features of the bill are disclosed.

Most oil men believe the industry can do its work best without dictatorship and that most of its present troubles are due to hindrances that should be removed.

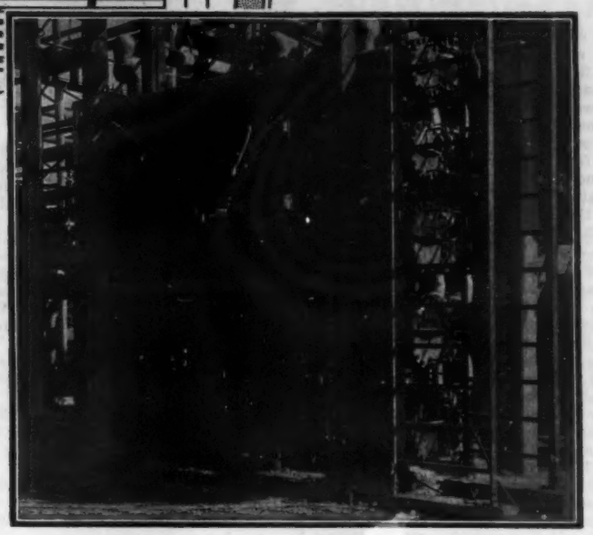
Industry needs economic freedom more than it does political control. Given liberty to work out its own salvation, industry would still be accountable if it misused its opportunities. Confined in a political straitjacket it must weaken and decay.

CROSS FLOW BAFFLING *cuts* HEAT TRANSFER LOSSES



Left—Top view sketch of Westinghouse Heat Exchanger showing the cross flow of fluid across the tubes.

Below—Installation of 5 Westinghouse liquid-to-liquid Heat Exchangers (2500 square feet) in a mid-continent refinery. Heat is transferred to crude—from gas oil in the lower three units, and from fuel oil in the upper two.



● *It pays to pay attention to little things.* For instance, Westinghouse engineers spent a great deal of time in perfecting a baffle arrangement for Westinghouse Heat Exchangers that results in *side-to-side* fluid-flow across the tubes. This seemingly unimportant feature effects substantial savings in heat transfer losses.

These baffles insure the most effective use of tube area by entirely eliminating the formation of gas pockets around the tubes. Non-condensible gas that separates from the liquid behind the baffles collects at the top of the shell, *in a space where there are no tubes,* and is continuously vented. Thus, blanketing of tubes by gas cannot occur and the heat transfer rate is maintained at a high value.

Other Advantages

Westinghouse Heat Exchangers are designed with features that result in low maintenance costs throughout their life.

All seams, flanges, nozzles, channels and supports are welded by the famous Flex-Arc method—making them leak-proof and immune to the injurious effects of expansion, contraction and corrosion.

Double grooves in the heavy tube sheets and a specialized procedure for rolling-in tubes assures leak-proof tube joints.

Maximum self-cleaning effect is obtained, because Westinghouse heat exchangers are designed for the highest velocities consistent with economical pressure drops through shell and tubes.

Unusual compactness of design reduces weight, holds space to a minimum and cuts transportation and installation costs.

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Trading Dull in Group 3 Market With Gasoline Movement Largely Confined to Contracts

By C. O. WILLSON

With no developments of an optimistic nature, spot trading in the Oklahoma (Group 3) tank car market over the past week was dull and prices generally reflected weakness. In a majority of cases Oklahoma refiners were maintaining the prices in effect a week ago but there were a few operators in an endeavor to secure more spot business who were willing to give minor price concessions and due to that fact new lows were established in several products.

As the week progressed the full significance of the drastic cut in gasoline tank wagon and service station prices effective May 8 throughout the Middle West became more and more apparent. Practically all the large and small distributors in that territory, which absorbs 25 per cent of all the motor fuel consumed in the United States, met the reductions of from 2 to 3 cents per gallon made effective by the Standard Oil Co. (Indiana) and explained in these columns last week. When first announced it was hoped that the reductions would prove temporary due to expected action on the part of the Federal or state governments which would change the present overproduction of crude oil which is directly responsible for the present unsatisfactory tank car and retail markets for gasoline throughout the greater part of the United States. Although many are still hopeful that some action will be taken along the lines of curtailing production in line with current requirements, others are coming to the conclusion that this outside aid will not materialise and the industry is faced with a continuance of present conditions for an indefinite period.

The latter are predicting that markets extending from the crude oil at the wells to consumers will continue to be dominated by excess raw material until this overproduction centering in the East Texas Field is ended by the natural depletion of pools and present market conditions are reversed based on an actual shortage of crude oil supplies. The technical phases of this situation with predictions as to how long a period of time will be required to bring about this reduction or elimination of excess supplies are discussed in articles appearing elsewhere in this issue.

Price Situation

Many operators believe that a program of "getting East Texas behind us" by allowing the field to continue its present large production offers the only satisfactory method of establishing a foundation on which to rebuild the industry's market structures. They point to the past as showing the futility of control through state proration orders and they do not believe that any program of Federal control would be adequate to meet present needs. At the same time they realize the seriousness of a continuance of present conditions over any great length of time. It has been said several times since the first of the month that never in the recent history of the industry were its markets at more unprofitable levels.

In times past at least one branch of the industry was on a profitable basis and in the case of integrated companies these profits usually offset in part at least the losses in other phases of operations. Now, with 25-cent crude oil, 2-cent tank car gasoline and retail prices at the lowest levels since before the World War, it is difficult to find a concern that is not experiencing substantial losses at this time. It is this unanimity of unsatisfactory conditions that leads to the conclusion that the entire industry will be quick to take advantage of any change in fundamental conditions which will give a sound basis for an upturn in all prices until profitable levels are obtained.

In this connection market students, due to developments over the past two weeks, are practically unanimous in their conclusion that any future advances in markets will be distributed equally starting at the posted schedules for crude oil at the wells, extending through the tank car markets at refineries and ending with the prices paid by consumers. The practice in the past of endeavoring to bolster all markets by arbitrarily advancing prices for crude oil or one or more of the refinery markets apparently will have no place in future operations. In regard to crude oil it is predicted that prices

Refined Market Barometer

With a decline in eastern tank car prices, sellers were hopeful that the bottom had been reached in gasoline quotations at refineries for a large part of the United States. Consumption of motor fuels is showing a seasonal gain but supplies are adequate in all areas. Natural gasolines continued dull in the Mid-Continent and Eastern markets with a more active demand reported in California. The kerosene market is spotted with an easier tone reported in the Mid-Continent and coastal points. The distillate demand is decreasing with the end of the furnace oil season. No definite trends were apparent in heavy fuels or industrial gas oils although it was feared by large sellers that a continuance of low crude oil prices would result in general price reductions. No important changes were reported in lubricants. Wax prices advanced at eastern refineries

Mid-Continent — Low octane gasoline continues slow and prices weak. Higher octane material stronger. Natural gasoline demand slow. Kerosene and distillates less active. Fuel oil prices lower when any changes were made. No general changes in gas oils. Better demand for lubricants.

East Coast—Gasoline tank car prices reduced. Less demand for kerosene. Bunker fuels steady. More active domestic demand for wax.

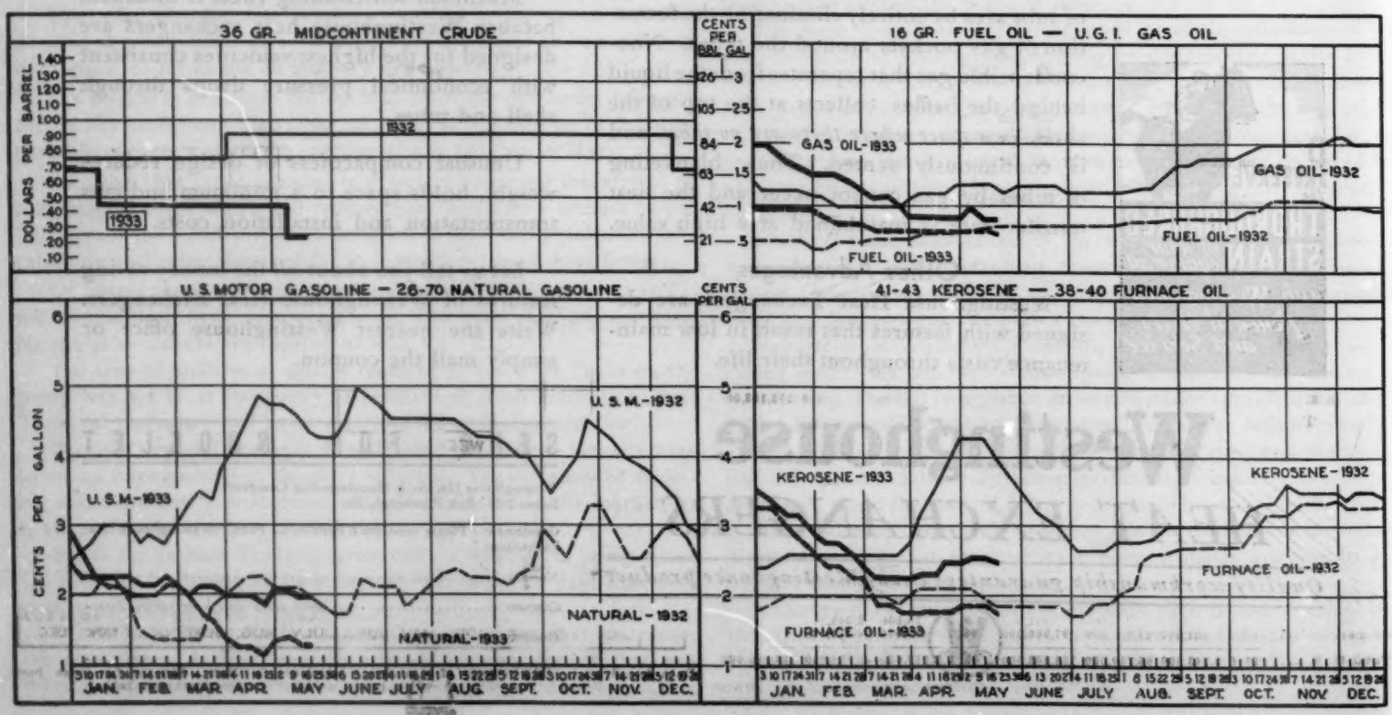
Pennsylvania—Some grades of neutral oils advanced. Slow demand for gasoline. Kerosene steady. Bright stocks unchanged.

Gulf Coast—Refiners maintaining prices in face of slow spot demand for most products.

California—Domestic gasoline demand stronger. Good export demand for kerosene.

Chicago—Gasoline movement largely confined to contracts due to fact that prices are lower than open market quotations. Distillate and kerosene prices lower. More industrial fuels offered and prices lower on some grades.

Representative Mid-Continent Quotations on Crude Oil and Refined Products Basis Oklahoma (Group 3)



will stay at their present levels until such time as there is an actual balance or near balance between supply and demand and the menace of large overproduction is removed. Such a development, it is pointed out, would no doubt be accompanied by a strengthening in refinery prices and these in turn could be reflected in prices charged consumers.

East Texas Market Center

The future plans of the major companies became more apparent last week when the Standard Oil Co. of New York announced that in the future its prices for gasoline at distributing points in New York and New England States would be determined by Gulf Coast prices. It is said that other eastern refining and marketing organizations are to pursue the same policy. This means that the eastern companies will take the Gulf Coast price as the base, add the cost of water transportation to Atlantic Seaboard terminals and the base tank car price for eastern distribution will be thus obtained.

As in the case of the Mid-Continent, East Texas gasoline is the controlling factor in the Gulf Coast market both for coastwise and export movement. Large quantities of gasoline from East Texas refineries are being shipped on a low rail rate to Gulf Coast terminals and from there moved by boat to foreign and domestic buyers. The larger coastal refiners and distributors have felt this competition for some time and it is now apparent that they no longer will endeavor to ignore it but will make it the basis for their entire operations.

As explained in these columns last week the Standard of Indiana has adopted a similar policy for the 11 Middle Western states in which it operates. The new tank wagon and retail prices adopted last week are based on the Group 3 tank car prices for gasoline. This Group 3 price while confined to Oklahoma and part of Kansas has in fact been determined by gasoline coming from East Texas for several months. Thus the latter area now directly controls foreign and domestic markets giving another example of the fact that excess production in any area when continued over sufficient length of time becomes the controlling factor in markets for the entire industry. Recognizing this fact, market observers over the past week when discussing possible changes in present conditions, were inclined to place all the responsibility on East Texas where operators of more than 30 refineries continue to manufacture approximately 30,000 bbls. of gasoline daily and sell it over a territory covering a large part of the domestic market east of the Rocky Mountain States. At the same time there is a large excess production of crude oil going to refiners in other areas.

Gasoline and Naphtha

The third grade gasoline in the Oklahoma market continued slow over the past week. Prices were holding fairly well at a low of 2 cents to the trade in Oklahoma although this price was one-eighth to one-fourth cent higher than the prevailing East Texas quotation. Due to the change in octane brackets more gasoline now comes under the third grade classification and the fear is expressed among sellers that this will shortly cause a top heavy situation and prices will decline.

This change in brackets made effective for the Mid-Continent in published quotations early in the month is causing considerable discussion in the trade. A large part of the gasoline formerly coming within the middle bracket now properly belongs in the lower bracket. Many gasolines formerly rated at 60 to 64 octane number are 59 or less under the C.F.R. motor method of rating. Other gasolines formerly rated from 65 to 68 and as such premium grades, now fall in the second bracket. As a result the middle and upper bracket material has become scarce over the past 10 days and prices on these grades advanced one-eighth cent over the past week with a low of 2⅜ cents for the middle octane U. S. Motor and 2⅝ cents for the premium grade. The supplies of the latter so far as the spot market is concerned are apparently confined to a half dozen sources.

At the same time there are a number of refiners who are continuing to quote their gasolines on the old C.F.R. laboratory method of testing. These companies are selling their regular grade gasolines of from 60 to 63 octane rating which their competitors state now belong in the third grade class. They are sold in many cases at a third grade price. This situation it is hoped will shortly be ironed out, buyers requiring their sources of supply to state definitely just what method of testing is used in determining anti-knock ratings enabling those who have adopted the C.F.R. motor method to secure the higher rating to which they are entitled.

There are many inquiries in the market for naphtha blending material. A part of this business is coming from trackage station operators who do not have contracts with refiners and are endeavoring to secure as low priced motor fuel as possible by blending. These blenders can buy natural gasolines at prices ranging from 1¼ to 2 cents per gallon depending on vapor pressures and can save a fraction of a cent in the cost of their finished motor fuels. Prices on naphthas when available range up from 2 cents per gallon. A sale of 440 endpoint blending naphtha at 2¼ cents was reported last week. The higher gravity gasolines were unchanged in price with practically no spot buying in Oklahoma. The contract movement of the common domestic grades improved during the week.

Natural Gasolines

Natural gasolines continue slow with no important changes over last week in the quotations for the several grades. The 26-70 grade was weak in Oklahoma at 1¼ cents with some Texas material quoted on an Oklahoma basis at 1⅛ cents. The latter price was the prevailing market in Texas shipments.

Natural gasoline manufacturers had hoped that this summer a satisfactory market could be secured for the grades ranging from 22 to 26-pound vapor pressure. These grades can be manufactured with a minimum loss. Unless prices improve in the near future, however, it is certain that the manufacturers will do as they did last year and shift to the more stabilized grades for which markets can be found direct through jobbers. Last year large quantities were reduced to 9 to 12-pounds vapor pressures and sold direct as motor fuels with little or no blending with refinery naphthas. These grades are now available at prices which range up from 2 cents per gallon.

Fuel Oil and Gas Oil

The low gravity fuel oils of medium or low cold test are available in Oklahoma at slightly lower prices. Sales at 27½ cents were reported. The high cold test grades sold in competition with large quantities available from East Texas refineries range down to 20 cents f.o.b. Oklahoma.

The U.G.I. and cracking stock gas oil market is not active. The low prices for crude oils has slowed up the cracking stock demand and there is a seasonal decline in the U.G.I. requirements. Prices are unchanged.

Kerosene and Distillate

Both kerosene and distillate are easier in the Oklahoma market. Specification 41-43 water white kerosene was available in Oklahoma the first of the week at a low of 2½ cents. The demand appears to be holding up fairly well but the seasonal decline in demand for distillate has made more kerosene available and this accounts for the small decline in prices.

With the season for furnace oil ended there is only a small tank car movement to jobbers. The tractor grades of distillates continue active. Prices on the furnace oil grades range from 1⅝ to 2 cents per gallon. Refiners are optimistic regarding the outlook for distillates next season, feeling confident that supplies will be limited unless something develops during the summer months which increases crude runs to stills. Some refiners are already storing their distillate and low cold test gas oil in preparation for next season's demand.

Lubricants

About all that can be said about the lubricant market is that there has been a seasonal improvement in demand for neutrals, cylinder stocks and the finished motor oils. Supplies are adequate to take care of this demand and prices are unchanged. There are more inquiries for wax with a greater domestic movement.

Establish Warehouse for Reshipment of Gasolines

HOUSTON, Tex., May 13.—The Shell Petroleum Corp., which has a refinery on the Ship Channel with the co-operation of the Federal Government, has worked out a plan which will enable the corporation to utilize larger quantities of butane as a blending agent in manufacturing finished motor fuels for export. H. H. Anderson, of the Shell corporation, explains the plan as follows:

"Considerable butane, a highly volatile product produced from the stabilization of domestic natural gasoline, is being produced by Shell at its refinery. A ready sale for this product has not been found locally, and Shell has decided to export it rather than to curtail its manufacture.

"The butane has such a high vapor pressure that it must be blended with other products having a much lower gravity and vapor pressure in order to be safely shipped by tank steamers. In order to secure a proper blending medium of products already being shipped to foreign ports, it will be necessary to use cargoes of naphtha refined on the island of Curacao, Dutch West Indies..

"A bonded manufacturing warehouse has been established at the refinery for the purpose of holding these cargoes while the surplus butane is admixed with the naptha. The resultant blend, having safe volatility and vapor pressure limits, will then be reshipped."

American Petroleum Institute Weekly Refinery Statistics

Figures below reported for week by American Petroleum Institute. (1) Per cent refinery capacity represented. (2) Daily average crude runs to stills. (3) Total motor fuel stocks. (4) Gas oil and fuel oil stocks. All figures in 42-gallon barrels.

Week Ending May 13, 1933, Compared to Week Ago

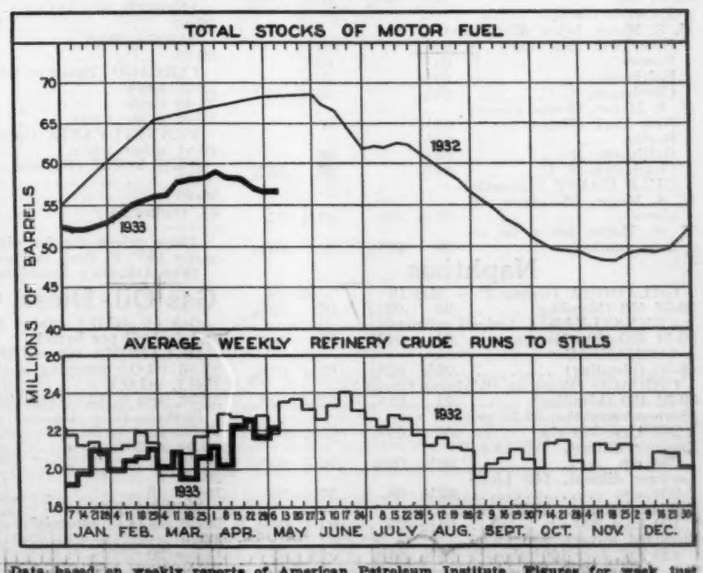
	Week ending May 13, 1933				Week ended May 6, 1933			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
East Coast	99.1	483,000	16,653,000	6,405,000	99.1	477,000	16,332,000	6,822,000
Appalachian ...	95.0	97,000	2,142,000	876,000	95.0	83,000	2,109,000	852,000
Ind., Ill., Ky. ..	97.5	310,000	8,543,000	3,689,000	97.5	301,000	8,440,000	3,637,000
Okla., Kans., Mo.	84.9	214,000	4,968,000	3,057,000	84.9	228,000	4,947,000	3,095,000
Inland Texas ...	56.4	92,000	1,591,000	2,134,000	56.4	69,000	1,632,000	2,092,000
Tex. Gulf	97.7	448,000	5,696,000	6,035,000	97.7	463,000	5,900,000	5,982,000
La. Gulf	97.3	103,000	1,524,000	1,920,000	97.3	98,000	1,585,000	1,850,000
N. La. and Ark..	88.5	39,000	319,000	591,000	88.5	37,000	313,000	567,000
Rocky Mtn.	90.8	36,000	1,319,000	641,000	90.8	32,000	1,326,000	634,000
California	94.6	421,000	13,964,000	97,960,000	94.6	450,000	14,458,000	98,332,000
Total U. S. ...	91.6	2,243,000	56,719,000	123,308,000	91.6	2,238,000	56,941,000	123,163,000

Total motor fuel stocks, Bureau of Mines basis, 58,220,000 bbls.

Week Ending May 13, 1933, Compared to Year Ago

	Week ending May 13, 1932				Week Ending May 14, 1932			
	(1)	(2)	(3)	(4)	(1)	(2)	*(3)	(4)
East Coast	99.1	483,000	16,653,000	6,405,000	100.0	447,600	6,441,000	5,294,000
Appalachian ...	95.0	97,000	2,142,000	876,000	91.8	96,400	1,701,000	1,104,000
Ind., Ill., Ky. ..	97.5	310,000	8,543,000	3,689,000	98.9	307,700	6,450,000	4,139,000
Okla., Kans., Mo.	84.9	214,000	4,968,000	3,057,000	89.6	263,100	3,992,000	3,304,000
Inland Texas ...	56.4	92,000	1,591,000	2,134,000	....	116,300	1,611,000	2,799,000
Tex. Gulf	97.7	448,000	5,696,000	6,035,000	99.8	470,300	6,451,000	6,089,000
La. Gulf	97.3	103,000	1,524,000	1,920,000	100.0	110,000	1,842,000	2,927,000
N. La. and Ark..	88.5	39,000	319,000	591,000	....	51,300	154,000	732,000
Rocky Mtn.	90.8	36,000	1,319,000	641,000	89.4	38,000	2,045,000	633,000
California	94.6	421,000	13,964,000	97,960,000	96.7	459,900	14,111,000	96,060,000
Total U. S. ...	91.6	2,243,000	56,719,000	123,308,000	95.1	2,359,600	44,798,000	134,756,000

*Refinery stocks only.



Data based on weekly reports of American Petroleum Institute. Figures for week just ended not shown in graph but are included in accompanying table

REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement except as otherwise noted

EXCLUSIVE OF TAXES

The following quotations are exclusive of the Federal excise taxes of 1 cent a gallon on gasoline and 4 cents on lubricating oils, which became effective June 21, 1932.

Refinery Gasolines

	May 16		May 9	
OKLAHOMA (Group 3)—				
*U. S. Motor grades:				
Regular	.02⅜	.02⅝	.02¼	.02½
Premium	.02⅝	.02¾	.02½	.02⅝
Third grade	.02	.02¼	.02	.02¼
60-62 400 grades:				
Regular	.02½	.02⅝	.02⅜	.02½
Premium	.02⅝		.02⅝	
Third grade	.02½	.02¼	.02½	.02¼
64-66 390	.02¼		.02¼	
64-66 375	.02½	.02⅝	.02½	.02⅝
68-70 350	.02⅝		.02⅝	
NORTH TEXAS—				
U. S. Motor grades:				
Regular	.02⅜	.02½	.02¼	.02½
Premium	.02⅝	.02¾	.02½	.02⅝
Third grade	.02	.02¼	.02	.02¼
60-62 400	.02½	.02¾	.02½	.02⅝
64-66 390	.02¼		.02¼	
64-66 375	.02⅝	.02½	.02⅝	.02½
64-66 360	.02½	.02¾	.02½	.02¾
†NORTH LOUISIANA—				
U. S. Motor grades:				
Regular	.02¾	.02⅞	.02⅝	.02¾
Premium	.03	.03⅛	.02⅞	.03
Third grade	.02⅜	.02½	.02⅝	.02½
60-62 400	.02½	.02⅝	.02½	.02⅝
†ARKANSAS—				
U. S. Motor grades:				
Regular	.02¾	.02⅞	.02½	.02⅝
Premium	.03		.02⅞	.03
Third grade	.02⅝	.02½	.02⅝	.02½
CHICAGO (Based on Oklahoma Group 3)—				
U. S. Motor grades:				
Regular	.02⅜	.02⅝	.02½	.02⅝
Premium	.02⅝	.02⅞	.02⅝	.02⅞
Third grade	.02	.02½	.02	.02½
60-62 400	.02⅛	.02⅜	.02	.02½
64-66 375	.02⅝	.02⅞	.02⅜	.02½
68-70 360	.02½	.02⅝	.02⅝	.02⅝
Aviation fighting grade	.03	.03¼	.03	.03¼

*Octane Ratings—The following octane ratings apply to the three grades of U. S. Motor gasoline: Regular, 60-64 octane number; premium, 65 and above octane number; third grade, 59 and below octane number. Octane ratings determined by C.F.R. Motor Method.

†For Arkansas, Louisiana and Mississippi delivery.

PENNSYLVANIA (inland refineries)—				
U. S. Motor	.04½	.04⅝	.04½	.04⅝
60-62 400	.04¾	.04⅞	.04¾	.04⅞
64-66 375	.05		.05	.05¼
68-70 350	.05	.05¼	.05	.05¼
CALIFORNIA (domestic movement)—				
54-58 U. S. Motor	.05¼	.06¼	.05	.06
58-60 400	.05¾	.06¾	.05¾	.06¾
EAST COAST—				
U. S. Motor, below 65 octane:				
New York (Bayonne)	.04½		.04¾	
Boston	.04½		.04¾	
Baltimore	.04½		.04¾	
Charleston, S. C.	.04¼		.04¾	
U. S. Motor, 65 and above:				
New York (Bayonne)	.04½		.05	
Boston	.04½		.05	
Baltimore, Md.	.04½		.05	
Charleston, S. C.	.04½		.05	.05¾
GULF COAST (domestic)—				
U. S. Motor, 65 octane and above	.03½	.04	.03½	.04
U. S. Motor, below 65 octane number	.03	.03½	.03	.03½

Naphthas

	May 16		May 9	
OKLAHOMA (Group 3)—				
50-52 450 (blending)	.02	.02⅛	.02	.02⅛
PENNSYLVANIA (inland refineries)—				
50-54 430-450 (blending)	.04	.04¼	.04	.04¼
†ARKANSAS—				
48-50 (blending)	.02¼	.02½	.02¼	.02½
CHICAGO (Based on Oklahoma Group 3)—				
50-52 450 (blending)	.02	.02¼	.02½	.02¾
Cleaners' naphtha, 56-58 gr., 200 i.b.p.-320 e.p.	.05	.05¼	.05¼	.05½
Lacquer diluent, 180 i.b.p.-250 e.p.	.06½	.06¾	.06½	.06¾
Lacquer diluent, 140 i.b.p.-200 e.p.	.07½	.08	.07½	.08
Rubber solvent, 68-70 gr., 100 i.b.p.-300 e.p.	.04½	.05	.05¼	.05½
Stoddard solvent, 300 i.b.p.-410 e.p., over 100° flash	.04½	.04¾	.04¾	.05
Pet. thinner, 290, 300 i.b.p.-415 e.p., over 83° flash	.04¼	.04½	.04	.04¼
V.M.&P. naphtha, 56-58 gr., 190-200 i.b.p.-330 e.p.	.05		.05	.05¼
Petroleum spirits	.03⅞	.04	.03⅞	.04

Natural Gasolines

	May 16		May 9	
OKLAHOMA (Group 3)—				
Grade 18-55	.01⅝	.01½	.01⅝	.01½
Grade 26-70	.01¼		.01¼	
Grade 30-70	.01⅛	.01¼	.01⅛	.01¼
*Low pressure grades:				
15 lb. v.p. (max.)	.01⅝	.01¾	.01⅝	.01¾
11 lb. v.p. (max.)	.02⅛		.02⅛	
NORTH TEXAS—				
Grade 18-55	.01⅝		.01⅝	
Grade 26-70	.01⅝	.01¼	.01¼	.01¼
Grade 30-70	.01⅛		.01⅛	
*Low vapor pressure grades:				
15 lb. v.p. (max.)	.01⅝	.01¾	.01⅝	.01¾
11 lb. v.p. (max.)	.02⅛	.02¼	.02⅛	.02¼
NORTH LOUISIANA—				
Grade 26-70	.01⅛		.01⅛	
CALIFORNIA—				
75-78 375	.03½	.04	.03½	.04

Kerosenes

(All kerosenes water white)

	May 16		May 9	
OKLAHOMA (Group 3)—				
41-43	.02½	.02¾	.02⅝	.02¾
42-44	.02⅝	.02⅞	.02¾	.02⅞
NORTH TEXAS—				
40-41	.02¼	.02⅜	.02½	.02⅜
41-43	.02⅝	.02½	.02⅝	.02½
†NORTH LOUISIANA—				
41-43	.02⅜	.03¼	.02¾	
42-44	.03	.03¼	.03	
†ARKANSAS—				
41-43	.03	.03¼	.02¾	
PENNSYLVANIA (inland refineries)—				
45	.04½		.04½	
46	.04¾		.04¾	
47	.04½	.04¾	.04½	.04¾
CHICAGO (Based on Oklahoma Group 3)—				
41-43	.02½	.02¾	.02⅝	.02⅞
42-44	.02⅝	.02⅞	.02¾	.03
*CALIFORNIA—				
38-40 high burning test	.03½	.04¼	.03½	.04¼
NEW YORK (Bayonne, N. J.)—				
41-43	.05¼		.05¼	
GULF COAST (domestic)—				
41-43 water white	.03¾	.04	.03¾	.04

*For Pacific Coast consumption.

†For Arkansas, Louisiana and Mississippi delivery.

Furnace Oils and Tractor Fuels

	May 16		May 9	
OKLAHOMA (Group 3)—				
32-36 straw	.01⅝	.01¾	.01⅝	.01¾
36-38 straw	.01¾	.01⅞	.01¾	.01⅞
38-40 straw	.01¾	.01⅞	.01⅞	.02
39-41 prime	.01⅞	.02	.02	
NORTH TEXAS—				
38-40 straw	.01¾	.01⅞	.01¾	.01⅞
†NORTH LOUISIANA—				
36-40	.02½	.02¾	.02½	.02¾
†ARKANSAS—				
32-36	.02½	.02⅝	.02½	.02⅝
CHICAGO (Based on Oklahoma Group 3)—				
32-36 straw	.01⅝	.01⅞	.01¾	.01⅞
38-40 straw	.01¾	.01⅞	.01⅞	.02
38-40 prime white	.01¾	.02	.01⅞	.02⅛
PENNSYLVANIA (inland refineries)—				
40-41 prime white	.03	.03¼	.03¼	.03½
NEW YORK (Bayonne, N. J.)—				
32-36	.04		.04	
36-40	.05		.05	
21 (industrial)	.03½		.03½	

Above prices are for distillate oils of zero cold test under 190° F. flash and good odor.

†For Arkansas, Louisiana and Mississippi delivery.

Gas Oil, Diesel Oil and Fuel Oil

Gas oil (G.O.) quoted per gallon basis; Diesel oil and fuel oil per barrel.

	May 16		May 9	
OKLAHOMA (Group 3)—				
32-36 (G.O.) cracking stock	.00⅞	.01	.00⅞	.01
U.G.I. (G.O.)	.00⅞	.01	.00⅞	.01
32-36, zero to 15 (G.O.) high flash	.01¼	.01⅜	.01¼	.01⅜
28-30, zero to 10	.60	.65	.60	.65
26-30, zero to 10	.50	.60	.50	.60
24-26	.35	.40	.35	.40
20-22	.30	.32½	.32½	
Below 16	.27½	.30	.30	.32½
NORTH TEXAS—				
32-36 (G.O.) industrial	.00⅞	.01	.00⅞	.01
22-26	.35	.40	.35	.40
Below 20	.30	.32½	.30	
†NORTH LOUISIANA—				
32-36 (G.O.) zero	.02¼		.02½	
14-16	.35		.30	.35
†ARKANSAS—				
30-32 (G.O.) zero	.02¼		.02¼	.02½
14-16	.35		.30	.35
CHICAGO (Based on Oklahoma Group 3)—				
32-36 (G.O.) industrial	.00⅞	.01	.01	.01⅛
28-30 (zero)	.65	.70	.70	.75
26-28 (zero)	.55	.60	.60	.65
22-26 (zero)	.45	.50	.50	.55
18-22 (zero)	.37½	.42½	.40	.45
Below 18	.27½	.37½	.30	.40
PENNSYLVANIA (inland refineries)—				
36-40	.03¼	.03⅜	.03¼	.03⅜

Note: Fuel oils of more than 40 cold test generally 5 to 15 cents per barrel less in all areas than shown in above tables.

†For Arkansas, Louisiana and Mississippi delivery.

CALIFORNIA—				
30-34 (G.O.) per bbl.	.80	.90	.80	.90
27 plus Diesel	.80	.90	.80	.90
15-19 bunker (at tidewater)	.50	.60	.50	.60
15-19 (cargo lots)	.45	.55	.45	.55
15-19 (tank cars)	.35	.50	.35	.50
GULF COAST—				
28-30 (G.O.)	.02⅝	.02⅞	.02⅝	.02⅞
28-30 Diesel	1.50		1.50	
Bunker C (bulk cargoes)	.50	.55	.50	.55
Bunker C (bunkers)	.60	.65	.60	.65
NEW YORK (Bayonne, N. J.)—				
28 plus (G.O.)	.04		.04	
*28-30 Diesel	1.65		1.65	
26-30 Diesel (tank cars)	.04		.04	
‡Bunker C	.70	.75	.70	.75

*Lighterage 6½ cents per barrel.

†Lighterage 5 cents per barrel.

‡Contract price at New York Harbor to ocean-going steamships only.

Petroleum Coke*

Prices per ton f.o.b. refineries in Chicago area.

Breeze (screenings)	4.50
Still runs	5.50
Lump and egg	6.50

*Refineries will absorb freight to 80 cents a ton.

Neutral Oils

(Viscosity at 100° F. and color)

	May 16		May 9	
OKLAHOMA (Group 3)—				
Zero to 10 Cold Test:				
150-3	.06¼	.06½	.06¼	.06½
180-3	.07½	.07⅝	.07½	.07⅝
180-4	.07¼	.07½	.07¼	.07½
200-3	.08	.08¼	.08	.08¼
200-4	.07¾	.08	.07¾	.08
240-3	.10	.10¼	.10	.10¼
240-4	.09¾	.10	.09¾	.10
280-3	.11	.11¼	.11	.11¼
280-4	.10½	.10¾	.10½	.10¾
300-3½	.11¼	.11½	.11¼	.11½
350-3½	.11¾	.12	.11¾	.12
400-4	.12¼	.12½	.12¼	.12½
500-4½	.12¾	.13	.12¾	.13
100-2 paraffin oil	.04¼	.04½	.04¼	.04½
15-30 Cold Test:				
200-3	.07¼	.07½	.07¼	.07½
200-4	.07	.07¼	.07	.07¼
240-3	.09¼	.09½	.09¼	.09½
240-4	.09	.09¼	.09	.09¼
280-3	.10¼	.10½	.10¼	.10½
280-4	.10	.10¼	.10	.10¼
PENNSYLVANIA—				
150 vis., No. 3, 400-405:				
Zero pour test	.15¾	.16	.15¾	.16
10 pour test	.15½	.15¾	.15½	.15¾
15 pour test	.13¾	.14	.13¾	.14
25 pour test	.13¼	.13½	.13¼	.13½
180 vis., No. 3, 25 pour test	.14¾		.14¾	
200 vis., No. 3:				
Zero pour test	.18	.18½	.18	.18½
10 pour test	.17¼	.17½	.17¼	.17½
15 pour test	.16	.16½	.16	.16½
25 pour test	.15¾	.16	.15¾	.16
GULF COAST—				
Pale Oils:				
100-2-2½	.04¾	.05¼	.04¾	.05¼
200-3	.05½	.06	.05½	.06
300-3	.06¾	.07¼	.06¾	.07¼
500-3½	.08¾	.09¼	.08¾	.09¼
750-3½	.09¾	.10¼	.09¾	.10¼
1,200-3½	.12	.12¼	.12	.12¼
2,000-4	.13	.13¾	.13	.13¾
Red Oils:				
200-5-6	.05	.05½	.05	.05½
300-5-6	.06	.06½	.06	.06½
500-5-6	.07	.07½	.07	.07½
1,200-5-6	.10¼	.10¾	.10¼	.10¾

2,000-6 plus	.12	.12½	.12	.12½
CALIFORNIA—				
Pale Oils:				
100-2½-3	.09	.09½	.09	.09½
200-2½-3	.09½	.10	.09½	.10
300-3-3½	.10½	.11	.10½	.11
350-3-4	.11	.11½	.11	.11½
400-3-4	.11½	.11¾	.11½	.11¾
450-3-4	.11¾	.12	.11¾	.12
550-3-4	.12	.12½	.12	.12½
Red Oils:				
200-4-5	.09½	.10	.09½	.10
300-5-6	.10½	.11	.10½	.11
350-5-6	.11	.11½	.11	.11½
400-5-6	.11½	.11¾	.11½	.11¾
450-5-6	.11¾	.12	.11¾	.12
500-5-6	.12	.12¼	.12	.12¼
600-5-6½	.12¼	.12½	.12¼	.12½
700-6½ plus	.12½	.12¾	.12½	.12¾
750-6½ plus	.12¾	.13	.12¾	.13
900-6½ plus	.13	.14½	.13	.14½

Bright and Steam Refined Stocks

OKLAHOMA (Group 3)—	May 16		May 9	
630 light green	.05½	.06½	.05½	.06½
600 light green S.R.	.05	.06	.05	.06
600 dark green S.R.	.03½	.04	.03½	.04
Bright Stocks:				
190-200 D	.17¾	.18¾	.17¾	.18¾
150-160 D, 0-10	.16		.16	
150-160 D, 10-25	.15½		.15½	
150-160 D, 25-40	.15	.15¼	.15	.15¼
150-160 E	.14		.14	
PENNSYLVANIA—				
600 S.R.	.09		.09	
650 S.R.	.11¼	.12	.11¼	.11½
600 Pennsylvania flash	.13		.13	
630 D filtered	.17¼		.17½	
600 E filtered	.13½	.14½	.13½	.14½
Pennsylvania Grade bright stock:				
Bright Stock, No. 8 color, 145-50 vis.				
210-540-550 flash:				
10 pour test	.22	.23	.22	.23
15 pour test	.20	.21	.20	.21
25 pour test	.19	.20	.19	.20

Wax and Petrolatum

(Prices per pound)

OKLAHOMA (Group 3)—	May 16	May 9
124-126 white crude scale	.01¾	.01¾
PENNSYLVANIA—		
122-124	.0205	.0205
124-126	.02⅛ .02¼	.02⅛ .02¼
NEW YORK (Bayonne, N. J.)—		
120-122 (a.m.p. basis)	.03	.02⅞
125-127	.03⅛	.03
130-132	.03½	.03½
133-135	.04¼	.04¼
135-137	.04½	.04½
CHICAGO (f.o.b. switching district)*—		
122-124	.0330 .0340	.0330 .0340
125-127	.0355 .0365	.0355 .0365
127-129	.0370 .0380	.0370 .0380
130-132	.0430 .0440	.0430 .0440
132-134	.0455 .0465	.0455 .0465

*Cents per pound on carlot orders in cotton lined burlap bags of 225 lbs. approx.
Add 3° F. for a.m.p.

NEW YORK—		
Petrolatum in barrels in carload lots:		
Dark green	.01⅞	.01⅞
Amber	.02	.02
Extra amber	.02⅜	.02⅜
Lily white	.05½	.05½
Snow white	.06½	.06½
Cream	.04½	.04½

Export Prices

GASOLINE

GULF COAST—	May 16	May 9
U. S. Motor	.03¼	.03¼

60-62 400	.03¾		.03½	
61-63 390	.03¾		.03½	
64-66 375	.03¾	.03½	.03½	.03¾
LOS ANGELES, CALIF.—				
U. S. Motor, 53-55 437 e.p.	.03¾	.04¼	.03¾	.04¼
U. S. Motor, 65 octane	.04½	.04¾	.04½	.04¾
U. S. Motor, 67 octane	.05		.05	
U. S. Motor, 69 octane	.05¼		.05¼	
58-60 400 endpoint gasoline	.04¼	.05	.04¼	.05
KEROSENE				
GULF COAST—				
41-43 prime white	.03⅞		.03⅞	.04
41 water white	.04		.04	
LOS ANGELES, CALIF.—				
41-43 water white	.03¾	.04¼	.03¾	.04¼
LUBRICANTS				
NEW YORK (f.a.s. in bbls.)—				
600 Warren E	.20		.20	
600 S.R. unfiltered	.15½		.15½	
650 S.R. unfiltered	.18		.18	
600 flash S.R.	.20		.20	
630 flash S.R.	.25½		.25½	
Bright stock, No. 8 color	.25½	.26½	.25½	.26½
Bright stock, No. 6½ color, dil	.24½	.25½	.24½	.25½
NEUTRALS				
NEW YORK—Pale Engine Oil, Bulk (vis. at 100)—				
230-3¾	.09¾		.09¾	
180-3½	.09½		.09½	
100-2¼	.05		.05	
Red Engine Oil, Bulk (vis. at 100):				
300-6½	.09½		.09½	
250-6	.08½		.08½	
200-6	.07¾		.07¾	
PARAFFIN WAX (Fully Refined)				
NEW YORK (prices per lb.)—				
123-125 a.m.p.	.02875		.02875	
125-127 a.m.p.	.03		.03	
130-132 a.m.p.	.0350		.0350	
133-135 a.m.p.	.0425		.0425	
135-137 a.m.p.	.04375		.04375	

Crude Oil Prices

Eastern States

SOUTH PENN OIL CO.
(Effective May 9, 1933)

Pennsylvania Grade Oil in National Transit Lines (Bradford Field)	$1.27
Pennsylvania Grade Oil in Southwest Pennsylvania Lines	.97
Penna Grade Oil in Eureka Pipe Line Lines	.92
Penna Grade Oil in Buckeye Pipe Line Lines	.77
Corning Grade Oil in Buckeye Pipe Line Co.'s line (May 8, 1933)	.50
Ragland Grade Oil in Cumberland Pipe Lines (Kentucky) (Jan. 16, 1931)	.60

PENNZOIL CO.
(Effective January 21, 1933)

Pennsylvania Grade Oil in National Transit Lines:	
Group A	$1.22
Includes Cochran, Franklin, Hamilton and Doolittle districts.	
Group B	1.21
Includes Titusville district.	
Group C	1.20
Includes Turkey and Tidioute districts.	
Group D	1.19
Includes Bear Creek and Porkey districts.	
Group E	1.17
Includes Eldenau, Bull Creek, Rough Run, Carbon, Dipner, Bredin, McJunkin, Jameson, Kennerdell, Emlenton, Tiona, Lacy and Kinzua districts.	
Price depends on length of pipe line haul to plant at Oil City.	

TIDE WATER PIPE CO.
(Effective May 9, 1933)

Bradford, Pa.	$1.27
Allegany, N. Y.	1.27

PURE OIL CO.
(Effective May 9, 1933)

Cabin Creek, W. Va.	$0.92
Bradford Hollow, W. Va.	.92
Kelly's Creek, W. Va.	.92

Rocky Mountain States

Iles, light (all grades) May 8, 1933	$ .25
Fort Collins, Wellington and Greasewood, Colo., are on contract basis.	
Florence (May 6, 1933)	.25
Dutton Creek, Wyo. (May 8, 1933)	.25
Rock Creek, Wyo. (Jan. 25, 1933)	
Frannie, light (May 8, 1933)	.25
Frannie, heavy (May 8, 1933)	.20
Salt Creek (May 8, 1933)	.25
See Stanolind Mid-Continent price schedule	
LaBarge (May 8, 1933)	.25
Big Muddy (May 6, 1933)*	.25
Big Muddy (May 8, 1933)†	.25
Grass Creek (Jan. 18, 1933)	.62
Grass Creek, heavy (Dec. 15, 1932)	.45
Elk Basin, light (Jan. 18, 1933)	.62
Lance Creek (Dec. 16, 1932)	.92
Poison Spider (Mar. 5, 1931)	.70
Hudson (June 2, 1931)	.65
Lander (Mar. 5, 1931)	.40
Rex Lake (Feb. 22, 1930)	1.10
Osage (Jan. 18, 1933)	.52
Lost Soldier (Apr. 12, 1932)	.80
Hamilton Dome (Dec. 16, 1932)	.25
Torchlight (May 8, 1933)	.35
Greybull (May 8, 1933)	.35
Cat Creek (May 6, 1933)	.35
Pondera (Nov. 7, 1932)	.60
Sunburst, Mont. (May 9, 1933)	.65
Hogback, N. Mex. (May 8, 1933)	.50
Lea County, N. Mex. (See Note)	.50
Maljamar (Jan. 28, 1933)	.25
Artesia-Jackson (Jan. 20, 1933)	.30

Note—Salt Creek, Cat Creek, Dry Creek, Dallas-Derby, Hudson, Greybull, Hogback, and Iles by Stanolind Oil & Gas Co. and remainder by Ohio Oil Co. Both companies posted Grass Creek light and Elk Basin, Lost Soldier posted by Producers & Refiners Corp. Artesia, Jackson and Maljamar posted by Continental Oil Co. Lea County, effective May 2, posted by Humble Oil & Refining Co., followed by other buyers; Fort Collins, Wellington, Orchard, Florence, Big Muddy, Cat Creek, Rattlesnake and Table Mesa by Continental Oil Co. Osage posted by Arro.

*Continental Oil Co. †Ohio Oil Co.

Middle Western States

OHIO OIL CO.
(Effective May 9, 1933)

Lima	$0.55
Wooster (May 8, 1933)	.50
Illinois	.47
Indiana	.25
Princeton	.47
Plymouth	Shut in
Western Kentucky	.42
Midland, Mich. (May 8, 1933)*	.75
Somerset, Ky. (May 9, 1933)	.50
Muskegon, Mich. (Mar. 27)	See note

*Posted by Pure Oil Co. Producers Pipe Line Co. pays 5 cents per barrel over Pure Oil Co.'s posted price. Muskegon: All companies pay $1 per barrel effective March 27. Somerset, Ky., crude purchased by Ashland Refining Co., Ashland, Ky., and posted price includes premium.

Mexico

Panuco*	$ .43

*F.o.b. ship, based on March transactions and exclusive of production and export taxes and bar dues.

Canada

Ontario (Jan. 18, 1933):	
Petrolia*	$1.75
Oil Springs*	1.83
Turner Valley†:	
Crude oil, 31°-35.9° (Jan. 24, 1933)	1.41
Crude oil, 36°-49.9° (Jan. 24, 1933)	1.90
Crude oil, 50° up (Jan. 24, 1933)	2.41
Discolored naphtha (Jan. 24, 1933)	2.53
Crude naphtha (Jan. 24, 1933)	2.32

*Imperial Oil, Ltd. †Imperial Oil, Ltd., and Regal Oil & Refining Co.

Crude Oil Prices in Kansas, Oklahoma, Texas, Louisiana and Arkansas

	Stanolind Crude Oil Pur. Co.	Stanolind Crude Oil Pur. Co.	Carter Oil Co.	Humble Oil & Refining Co.	Gypsy Oil Co.	Gulf Pipe Line Co.	Gulf Refining Co. of Louisiana	The Texas Company	The Texas Company	Magnolia Petroleum Co.	Sinclair Prairie Oil Mar. Co.	Sinclair Prairie Oil Mar. Co.	Shell Petroleum Corp.	Standard Oil Co. of Louisiana	Empire Pipe Line Co.
	May 6	May 3	May 8	May 2	May 8	May 5	May 6	May 9	May 3	May 8	May 3	May 8	May 3	May 6	May 8
Kansas	$.25	....	$.25	....	$.25	....	....	$.25	....	....	....	$.25	*$.25	....	$.25
Oklahoma	.25	....	.25	....	.25	....	....	.25	....	....	....	.25	*.25	....	.25
North-Central Tex.	....	$.25	....	$.25	....	$.25	....	....	$.25	$.25	$.25	....	....	....	....
East Central Tex.	....	.25	....	.25	....	.25	....	....	.25	.25	.25	....	....	....	....
East Texas	....	....	....	‡ .25	....	.25	....	....	.25	.25	.25	....	* .25	....	.25
West Texas	....	....	....	.20	....	.20	....	....	.20	....	....	....	.20	....	....
Gulf Coast-Tex.-La.	....	....	....	.30	....	.30	....	....	.30	.30	....	....	*.30	....	....
Salt Flat, Tex.	....	....	....	.23	....	....	....	....	....	....	....	....	.23	....	....
Pettus, Tex.	....	....	....	.35	....	....	....	....	....	....	....	....	....	....	....
Mirando, Tex.	....	....	....	.25	....	....	....	....	....	.25	....	....	....	....	....
Saxet, Tex.	....	....	....	....	....	....	....	....	.30	....	....	....	....	....	....
Duval, Tex.	....	....	....	....	....	....	....	....	.25	....	....	....	....	....	....
Darst Creek, Tex.	....	....	....	.23	....	.23	....	....	.23	.23	....	....	....	....	....
Luling, Tex.	....	....	....	....	....	....	....	....	....	.30	....	....	....	....	....
Corsicana (heavy)	....	....	....	....	....	....	....	....	....	.20	....	....	....	....	....
Lytton Springs, Tex.	....	....	....	....	....	....	....	....	....	.25	....	....	....	....	....
Bruner, Tex.	....	....	....	....	....	.23	....	....	....	....	....	....	....	....	....
Conroe, Tex.	....	....	....	.30	....	....	....	....	.30	....	....	....	....	....	....
Refugio, Tex.	....	....	....	.30	....	....	....	....	....	....	....	....	....	....	....
Gray County, Tex.	....	....	....	.20	....	....	....	....	.20	.20	....	....	....	....	....
Carson-Hutchinson	....	....	....	.18	....	.18	....	....	.18	.18	....	....	....	....	....
North Louisiana	....	....	....	....	....	....	$.25	....	.25	.25	....	....	....	$.25	....
El Dorado (light)	....	....	....	....	....	....	.25	....	.25	.25	....	....	....	.25	....
Smackover, Ark.	....	....	....	....	....	.20	.30	....	.20	....	....	....	....	.20	....
Jennings, La.	....	....	....	....	....	.20	....	....	....	....	....	....	....	....	....

*May 6, 1933. May 10. ‡May 12. †The Magnolia Petroleum Co., effective May 9, posted the following prices in Oklahoma: Below 28 degrees, 20 cents; 28 to 34.9 degrees, 23 cents; 35 degrees and above, 25 cents.

In the fields in which they are buying in Kansas or Oklahoma or both, the following other companies posted 25 cents per barrel on the date named: Bell Oil & Gas Co., May 2; Barnsdall Refineries, Inc., May 6; Pure Oil Co., May 8; Mid-Continent Petroleum Corp., May 6; Skelly Oil Co., May 6; Vickers Petroleum Corp., May 7; Anderson & Prichard, May 6; Johnson Oil & Refining Co., May 6; Champlin Refining Co., May 6; Yale Refining Co., May 6; El Dorado Refining Co., May 6; Globe Refining Co., May 6; Rock Island Refining Co., May 8; White Eagle Oil Corp., May 9; Continental Oil Co., May 8.

The Phil-Tex Oil Co. posted 20 cents in Gray County and 18 cents in Carson and Hutchinson Counties, Texas, on May 6, and on May 7 posted 25 cents in Oklahoma.

The Louisiana-Arkansas Pipe Line Co. posted 15 cents in Urania and 25 cents in other North Louisiana fields in which it buys oil. Its Smackover price of 25 cents was unchanged.

The Tide Water Oil Co. on May 5 posted 25 cents in East Texas and 40 cents in Conroe, Texas.

The Atlantic Oil Producing Co. posted 25 cents in East Texas, 20 cents in West Texas, and 25 cents in Pettus, Texas, on May 5.

H. L. Hunt, Inc., effective May 9, posted 30 cents in Urania, La. Panola Pipe Line Co. posted 25 cents in East Texas May 6.

(California Crude Oil Prices on Page 38)

TANK WAGON MARKETS

Quotations for gasoline and kerosene in United States, as furnished by the larger marketing concerns, include taxes

May 16, 1933

Taxes

The gasoline quotations given in the following tables include the 1-cent Federal tax as well as state, county and city taxes. The gasoline quoted is the regular or standard grade. In most marketing areas a third or competitive grade is generally available at 1.5 or more cents per gallon under the service station price for the regular grade. Ethyl Gasolines are sold 2 cents above the service station price for the regular grade, except in Standard of Indiana and Standard of Ohio territories where premium for Ethyl Gasoline is 3.5 cents.

Southern District

STANDARD OIL CO (KENTUCKY)

	Gasoline			Kero.
	Tank wagon	Service station	Inc'lds tax	tank wagon
Atlanta, Ga.	18.0	18.0	7.0	10.0
Augusta	20.0	20.0	7.0	11.0
Macon	19.0	19.0	7.0	14.0
Savannah	20.0	20.0	7.0	14.0
Birm'ham, Ala.	21.0	21.0	8.0	12.0
Mobile	19.0	19.0	8.0	8.0
Montgomery	22.0	22.0	8.0	14.0
Jackson, Miss.	16.0	16.0	7.0	12.0
Vicksburg	17.5	17.5	7.0	12.0
Jack'ville, Fla.	19.0	19.0	8.9	9.5
Miami	19.0	19.0	8.0	13.5
Pensacola	20.0	20.0	8.0	14.0
Tampa	17.0	17.0	8.0	12.0
Lexington, Ky.	18.5	18.5	6.0	10.0
Covington	17.0	17.0	6.0	11.5
Louisville	17.0	17.0	6.0	10.0
Paducah	19.0	19.0	6.0	9.0

In addition to the state tax of 4 cents on gasoline, Montgomery has city and county tax of 2 cents on gasoline and one-half cent on kerosene. Kerosene prices in Georgia include 1-cent tax. In Florida, an inspection fee of 0.125 cent; in Alabama, an inspection fee of one-half cent on kerosene and one-fortieth cent on gasoline. To Pensacola, Montgomery and Birmingham state taxes add 1-cent tax. To Mobile state tax add 1-cent city tax. Dealers receive discount of 3 cents off tank wagon price throughout territory.

Southwestern District

MAGNOLIA PETROLEUM CO.

	Gasoline			Kero.
	Tank wagon	Service station	Inc'lds tax	tank wagon
Dallas, Tex.	13.5	15.0	5.0	7.0
Fort Worth	13.5	15.0	5.0	7.0
Houston	13.5	15.0	5.0	8.0
San Antonio	13.5	15.0	5.0	8.0
El Paso	13.5	15.0	5.0	8.0
Texarkana	*14.0	14.0	5.0	†11.0
Muskogee, Ok.	9.5	12.0	5.5	6.0
Okla. City	11.5	14.0	5.0	8.0
Tulsa	12.5	15.0	5.0	8.0
Ft. Smith, Ark.	*13.5	13.5	5.0	†8.0
Little Rock	*14.5	14.5	7.0	†10.0

*Less 2½ cents to dealers. †Less 2 cents to dealers.

Standard Oil Co. (Indiana)

	Gasoline			Kero.
	Tank wagon	Service station	Inc'lds tax	tank wagon
Chicago	13.6	13.6	4.0	8.0
Decatur, Ill.	13.0	13.0	4.0	8.5
E. St. Louis	13.3	13.3	4.0	7.8
Joliet	13.0	13.0	4.0	8.5
Peoria	13.0	13.0	4.0	8.5
Quincy	13.8	13.8	4.0	8.3
Davenport, Ia.	13.1	13.1	4.0	8.6
Des Moines	13.1	13.1	4.0	8.6
Mason City	13.1	13.1	4.0	8.6
Sioux City	13.7	13.7	4.0	8.2
Duluth, Minn.	13.7	13.7	4.0	8.8
Mankato	13.8	13.8	4.0	8.8
Minneapolis	13.4	13.4	4.0	8.9
LaCrosse, Wis.	14.8	14.8	5.0	9.2
Green Bay	14.3	14.2	5.0	8.7
Milwaukee	13.7	13.7	5.0	8.2
Madison	13.9	13.9	5.0	8.4
Detroit, Mich.	13.5	13.5	4.0	9.0
Grand Rapids	13.2	13.2	4.0	8.7
Saginaw	13.5	13.5	4.0	9.0
Evansville, Ind.	14.0	14.0	5.0	8.5
Indianapolis	14.2	14.2	5.0	8.7
South Bend	14.5	14.5	5.0	9.0
Fargo, N. D.	16.1	15.1	4.0	10.5
Huron, S. D.	15.2	15.2	5.0	9.5
Sioux Falls	14.5	14.5	5.0	9.5
K. C., Mo.	12.3	13.2	4.0	7.7
Springfield	12.1	12.1	4.0	7.8
St. Louis	11.2	11.2	3.5	7.2
St. Joseph	11.8	11.8	4.0	7.8
Wichita, Kans.	11.1	11.1	4.0	6.6
Bartlesville, Ok.	12.5	15.0	5.0	7.8

*State tax 2 cents, 1-cent city tax and 1-cent Federal tax.

Effective January 1, 1933—Discounts on C.D.A. on 500 gallons or more per month throughout territory; Red Crown Ethyl Gasoline, 3 cents off tank wagon price; Red Crown gasoline, 2½ cents off tank wagon price; Stanolind Blue gasoline, 1 cent off tank wagon price. On deliveries of 75,000 gallons or more each classification allowed 1 cent additional discount.

Discounts on resellers authorized agent's agreement: Same amounts as above except made off service station price instead of tank wagon price.

Stanolind Furnace Oil in Chicago

Effective April 28, 1933, prices f.o.b. Chicago, tank wagon prices: No. 1 (36-40 lt. stw. zero), 100 gallons or more, 6¼ cents; No. 2 (30-34 stw. zero), 150 gallons or more, 5¾ cents; No. 3 (32-36 zero), 300 gallons or more 5¼ cents; No. 4 (12-16 zero), 400 gallons or more, 4¼ cents. Viscosity of No. 4, 90-115 at 100° F.; No. 5, 4 cents; for less than specified quantities, add 1 cent.

Fuel Oils

Associated Distributors Prices

Spot market prices on 350 gallons or over deliveries, and top prices on contracts, respectively: 38-40, 7 and 8 cents; 32-36 light, 6¾ and 7¾ cents; 32-36 dark, 6¼ and 7¼ cents; 28-30, 5¾ and 6¾ cents; 24-26, 4¾ and 5¾ cents; 18-22, 4¼ and 5¼ cents. On deliveries of less than 350 gallons the spot price is one-half cent higher.

Naphtha

	Tank	
	Wagon	Car
Oleum spirits	10.7	6.22
V.M.&P. naphtha	12.7	7.22
Cleaners' naphtha	13.0	9.22
Stanisol	13.0	9.22

Tank wagon prices f.o.b. Chicago, January 6, 1933. Each of above prices subject to discount of 1 cent per gallon for 150-gallon lots if covered by contracts.

Rocky Mountain District

CONTINENTAL OIL CO.

	Gasoline			Kero.
	Tank wagon	Service station	Inc'lds tax	tank wagon
Denver, Colo.	14.0	17.0	5.0	12.5
Pueblo	14.0	17.0	5.0	12.5
Grand Junctn.	18.0	21.0	5.0	14.5
Casper, Wyo.	16.0	19.0	5.0	10.0
Cheyenne	14.0	17.0	5.0	11.5
Butte, Mont.	20.0	23.0	6.0	17.0
Billings	21.0	24.0	6.0	15.5
Great Falls	21.0	23.0	6.0	17.0
Helena	21.0	24.0	6.0	17.0
Salt Lake, Utah	16.0	19.0	5.0	16.0
Albu'que, N. M.	14.0	17.0	*7.0	12.0
Boise, Idaho	18.5	21.5	6.0	18.0
Twin Falls	20.5	23.5	6.0	18.0

*One-cent city tax.

Central South District

STANDARD OIL CO. (LOUISIANA)

	Gasoline			Kero.
	Tank wagon	Service station	Inc'lds tax	tank wagon
N. Orleans, La.	15.5	15.5	*7.0	†11.0
Baton Rouge	15.0	15.0	6.0	†10.0
Alexandria	14.0	14.0	7.0	†8.5
Lafayette	15.0	15.0	7.0	†10.0
Lake Charles	15.0	15.0	7.0	†10.0
Shreveport	14.0	14.0	6.0	†11.0
Knoxville, Tenn.	19.5	19.5	8.0	13.5
Memphis	18.0	18.0	8.0	10.0
Chattanooga	18.5	18.5	8.0	12.0
Nashville	19.0	19.0	8.0	10.0
Bristol	18.0	18.0	8.0	13.0
Lt. Rock, Ark.	15.5	15.5	8.0	10.0

*Includes city tax of 1 cent. †Louisiana kerosene prices include 1-cent state tax. New Orleans kerosene price also includes 1-cent city tax.

Two-cent discount off kerosene tank wagon price and 2½ cents off gasoline tank wagon price to dealer and commercial accounts.

Nebraska

STANDARD OIL CO. (NEBRASKA)

	Gasoline			Kero.
	Tank wagon	Service station	Inc'lds tax	tank wagon
Omaha	16.3	17.3	5.0	8.0
McCook	17.0	17.0	5.0	8.5
Norfolk	16.8	17.8	5.0	8.0
N. Platte	17.0	17.0	5.0	8.0
Scottsbluff	17.0	17.0	5.0	9.5

Note — Dealers' discount allowed as follows: Red Crown Ethyl, 3 cents off station price; Red Crown, 2½ cents off normal service station price; Nebraska Blue (third grade), 1 cent off normal service station price.

Atlantic Coast District

STANDARD OIL CO. (NEW JERSEY)

	Gasoline			Kero.
	Tank wagon	Service station	Inc'lds tax	tank wagon
Atl'tic City, N.J.	14.0	15.0	4.0	11.3
Newark	13.9	13.9	4.0	8.5
Annapolis, Md.	14.6	16.6	5.0	9.0
Baltimore	14.0	15.0	5.0	8.0
Cumberland	15.5	16.5	5.0	11.7
Wash'g'n, D. C.	13.2	13.2	3.0	10.0
Danville, Va.	16.7	17.7	6.0	9.9
Norfolk	15.1	16.1	6.0	10.5
Petersburg	16.2	17.2	6.0	11.4
Richmond	15.5	16.5	6.0	10.7
Roanoke	16.7	17.7	6.0	11.0
Charla'n, W. Va.	15.4	16.4	5.0	11.6
Parkersburg	14.0	15.0	5.0	10.2
Wheeling	15.0	16.0	5.0	11.3
Charlotte, N. C.	17.3	18.3	7.0	13.5
Hickory	18.5	19.5	7.0	12.7
Mt. Airy	18.4	19.4	7.0	12.8
Raleigh	18.1	19.1	7.0	12.3
Salisbury	18.0	19.0	7.0	12.6
Charleston, S.C.	16.1	17.1	7.0	10.3
Columbia	18.0	19.0	7.0	12.2
Spartanburg	15.0	16.0	7.0	12.5

Two cents per gallon discount off tank wagon price of gasoline to dealers except Washington, D. C., and Baltimore, Md., where discount is 3 cents. Kerosene 1 cent off tank wagon for 25 gallons or more under contract except New Jersey.

Ohio

STANDARD OIL CO. (OHIO)*

	Gasoline			Kero.
	Tank wagon	Service station	Inc'lds tax	tank wagon
Ohio points	15.5	16.0	5.0	†12.0

*Two cents off on gasoline tank wagon to dealers and commercial accounts; 2½ cents off tank wagon and kerosene to dealers.

New York and Part of New England District

STANDARD OIL CO. (NEW YORK)*

	Gasoline			Kero.
	Tank wagon	Service station	Inc'lds tax	tank wagon
Albany, N. Y.	14.0	15.0	4.0	9.0
New York	13.5	13.5	4.0	8.0
Buffalo	13.5	14.5	4.0	9.0
Rochester	14.5	15.5	4.0	9.0
Syracuse	15.0	16.0	4.0	9.5
Boston, Mass.	15.0	15.0	4.0	8.0
Augusta, Me.	18.0	19.0	5.0	9.0
Manch'tr, N. H.	17.5	18.5	5.0	8.0
Burlington, Vt.	18.0	19.0	5.0	8.5

*Discount schedule to commercial accounts are as follows: At service stations, 1 cent per gallon; tank wagon deliveries up to 20,000 gallons monthly, 2 cents per gallon; 20,000 to 100,000 gallons, 2½ cents; 100,000 to 300,000 gallons, 3 cents; 300,000 gallons and up, 3½ cents.

Canada*

IMPERIAL OIL, LTD.

Imperial 3-Star Gasoline

	Gasoline			Kero.
	Tank wagon	Service station	Inc'lds tax	tank wagon
Hamilton, Ont.	23.5	25.5	6.0	15.5
Toronto, Ont.	23.5	25.5	6.0	15.5
Brandon, Man.	29.0	32.5	7.0	17.5
Winnipeg, Man.	26.0	29.5	7.0	17.5
Regina, Sask.	29.0	33.0	6.0	21.5
Saskatoon, Sask.	31.0	35.0	6.0	23.5
Edmonton, Alta.	29.5	33.5	6.0	22.5
Calgary, Alta.	26.0	30.0	6.0	10.0
Vancouver, B.C.	26.5	29.5	7.0	22.5
Montreal, Que.	22.0	25.0	6.0	15.0
St. Johns, N.B.	24.5	28.5	7.0	20.5
Halifax, N.S.	23.5	27.5	6.0	20.5

*Imperial gallon used in Canada.

Pennsylvania-Delaware and Part of New England

ATLANTIC REFINING CO.

	Gasoline			Kero.
	Tank wagon	Service station	Inc'ld tax	tank wagon
Pittsburgh, Pa.	13.5	14.5	4.0	9.5
Philadelphia	13.5	14.0	4.0	9.0
Scranton	13.5	14.5	4.0	9.0
Allentown	13.5	14.5	4.0	9.0
Altoona	13.5	14.5	4.0	9.5
Erie	13.5	14.5	4.0	9.5
Dover, Del.	13.5	14.5	4.0	9.0
Wilmington	13.5	14.5	4.0	9.0
Springf'd, Mass.	16.5	17.5	4.0	8.0
Worcester	15.5	16.5	4.0	8.0
Boston	15.0	16.0	4.0	8.0
Providence, R.I.	14.5	15.5	3.0	8.0
Hartford, Conn.	15.0	16.0	3.0	8.0
New Haven	15.0	16.0	3.0	8.0

Discount schedule effective November 1, 1932. In Delaware and Pennsylvania, 2 cents off station price on purchases of 2,000 gallons or more per month, in remainder of territory 1 cent. Wholesale discount 2½ cents per gallon on monthly deliveries of 20,000 to 100,000 gallons, 3 cents on 100,000 to 300,000 gallons, and 3½ cents on more than 300,000 gallons.

Pacific Coast Territory

STANDARD OIL CO. OF CALIFORNIA*

	Gasoline			Kero.
	Tank truck†	Posted retail	Incl'ds tax	tank of wagon
Fresno	19.5	18.0	4.0	14.0
San Francisco	19.0	17.5	4.0	13.5
Los Angeles	18.0	16.5	4.0	12.5
Reno, Nev.	22.5	21.0	5.0	15.5
Portland, Ore.	19.5	18.0	5.0	13.5
Seattle, Wash.	20.5	19.0	6.0	13.5
Tacoma	20.5	19.0	6.0	13.5
Spokane	22.5	23.0	6.0	18.0
Phoenix, Ariz.	22.5	20.5	6.0	†16.0

*Retail prices posted by Standard Stations, Inc., a subsidiary.

†Above prices are at company's plant or depots as company does not operate stations. A 4-cent per gallon discount is given dealers and customers taking tank wagon lots except in Phoenix where the discount is 1 cent. ‡Includes 5-cent state tax.

TANK WAGON CHANGES

(Regular Grade Gasoline and Kerosene)

Standard Oil Co. and Standard Stations, Inc., advanced gasoline tank wagon and station prices generally throughout the Pacific Coast states on May 1.

Standard Oil Co. (Nebraska) reduced the kerosene price to 8 cents in Omaha April 21 and in Norfolk April 27.

Standard Oil Co. (Indiana) made reductions in its tank wagon and station prices for gasoline of 2.2 to 3 cents throughout its territory on May 8. Tank wagon dump discount on 25 gallons or more discontinued; kerosene tank wagon price reduced at Fargo, North Dakota, 4 cents on May 8.

Standard Oil Co. of California and Standard Stations, Inc., effective May 9 advanced gasoline tank truck and retail prices one-half cent at Fresno and Los Angeles, California.

Standard Oil Co. (Kentucky) effective April 27 reduced gasoline tank wagon and service station prices 1 cent at Louisville, Ky; effective April 28 reduced same product 1 cent at Covington, Ky; effective April 25 reduced gasoline tank wagon and service station prices one-half cent at Vicksburg, Miss.; effective April 28 reduced gasoline tank wagon and service station prices 1 cent at Atlanta, Ga., and on May 6 reduced kerosene tank wagon price 1 cent at same point; effective May 1 reduced kerosene tank wagon price from 14 to 11 cents at Augusta, Ga.; effective April 26 reduced gasoline tank wagon and service station prices 2 cents at Tampa, Fla.; effective April 27 reduced gasoline tank wagon and service station prices 2 cents at Miami, Fla.

Effective May 17 Standard Oil of Ohio reduced the price differential between Ethyl and regular gasoline from 3 cents to 2½ cents per gallon. Present price for Ethyl is 18½ cents a gallon instead of 19 cents, while regular will remain unchanged at 16 cents.

CRUDE OIL PRICE CHANGES

The Stanolind Crude Oil Purchasing Co. does not post a price for crude oil in East Texas, but beginning May 10, it is paying 25 cents per barrel. The Texas Company posted a price of 25 cents in East Texas on May 10 and the Humble Oil & Refining Co. posted 25 cents per barrel in the same field on May 13, and offered to buy at that price all the oil held in storage by it for the account of customers.

The Ohio Oil Co., effective May 8, reduced the price of Big Muddy, Wyoming, crude 25 cents per barrel, or to 75 cents; and on May 9 reduced the price of Sunburst, Montana, oil 10 cents per barrel, or to 65 cents.

Effective May 9, the Ashland Refining Co., Ashland, Ky., posted 50 cents per barrel (including premium) in the Somerset, Kentucky, Field.

OFFERING PRICE PREMIUMS

Offers of 10 and 12½-cent premiums over the 25-cent posted price for crude oil in North Texas and 10 cents per barrel premium in the Oklahoma City Field is taken to mean that the low posted price schedule will not long prevail and that better prices all along the line are in sight, notwithstanding the present tremendous production.

Consider
Electric Power

▲ ▲ ▲ ▲ ▲ ▲ ▲

Members of the American Petroleum Institute are invited to consider the cheapness and availability of electric power for the oil industry. For pumping, drilling, refining—electric power from interconnected power systems is dependable, reliable, and cheap.

Consult your nearest power company when you are considering power for your next project.

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PETROLEUM
ELECTRIC POWER CLUB

Schedules of Gulf Coast to Determine Gasoline Tank Car Quotations in Eastern Markets

By A. E. MOCKLER

New York Bureau, The Oil and Gas Journal

NEW YORK, May 15.—A sweeping revision in pricing policies for motor fuel in East Coast markets is indicated for the near future with announcement by Standard Oil Company of New York, Inc., operating subsidiary of Socony-Vacuum Corporation, that it will shortly take steps designed to bring resale prices on refined products in its territory into direct relationship with cargo prices at the Gulf. The plan, as outlined by the company, includes the elimination of commercial discounts at service stations. In working out the new pricing arrangement, tank car gasoline prices at New York Harbor will be determined by using the prevailing cargo quotation at the Gulf as a basis, with resale prices to fluctuate in conformity with price changes in the cargo market at the Gulf. To the Gulf cargo quotation, under this arrangement, will be added transportation costs to New York Harbor bulk terminal, marketing and incidental expenses, and a figure thus reached at which motor fuel will be sold in tank cars, f.o.b. this terminal.

To establish a quotation at which dealers will receive tank wagon deliveries throughout its territory, there will be added to the tank car quotation at seaboard terminal transportation cost to points of distribution, plus marketing expenses, and in arriving at the service station quotation a fair margin of profit to the station dealer will be included. Service station quotations, however, will continue competitive with prevailing retail prices in any given area, with both tank wagon and service station prices to be quoted in cents and tenths of cents.

Refinery Gasoline

Refiners reduced tank car quotations one half cent to 4¼ cents per gallon for U. S. Motor gasoline, and 4½ cents per gallon for gasoline of 65 octane number and above, in tank car lots f.o.b. refineries or marine terminals effective May 10.

In view of the rapid changes in the crude oil situation and falling prices for gasoline here and in other areas, as well as the pending change in pricing methods for tank car deliveries, jobbers had definitely lost their confidence in the present price structure, and had returned to their old policy of thoroughly shopping the market before placing tank car business, and of carrying but limited stocks at their storage plants.

With U. S. Motor gasoline for coastwise shipment out of the Gulf offered at very low prices, movement of motor fuel from that point into East Coast territory is expected to show a substantial increase as the summer season develops and this condition is expected to bring about lower tank car and tank wagon quotations in this area when the new pricing policy of major factors becomes effective. With present low rates prevailing in the tanker market, gasoline could be moved from the Gulf to New York today at approximately one-third of a cent per gallon, and this would permit of the laying down of the Gulf Coast product at this and nearby ports at a price attractively under posted levels in the East.

Present posted prices for gasoline for domestic movement from California are entirely out of line with the schedules existing here and at the Gulf, and for this reason practically all of the Pacific Coast motor fuel moving eastward represents intercompany shipments, where price is not the determining factor.

Kerosene

With a seasonal easing off in tank car kerosene demand in some parts of the territory, the tank car market here has weakened, and sellers are booking business at 5 cents per gallon, as compared with the posted price of 5¼ cents, and some shading of the 5 cent figure has been reported. Consumption in other parts of the territory, however, particularly New England, is continuing at record high levels, and refiners are still producing kerosene in large volume to take care of their sales outlets in that district.

Furnace Oil

Refiners reported a good volume of contract business for all grades of domestic heating oils for the 1933-34 heating season, and bookings are continuing. Spot trading was quiet in the tank car market, however, with quotations unchanged.

Tank wagon volume of furnace oil business was also on the decline during the week, with quotations remaining unchanged at contract levels on all grades.

Bunker Oil

Refiners continue to quote the posted price of 75 cents per barrel, in bulk, f.o.b. refinery terminals, with steamship contract purchasers here still getting a 5 cents per barrel concession.

Notwithstanding recent price cutting in crude oil markets, refiners are still bullish on bunker oil, and the idea of a price advance has by no means been abandoned. The statistical position of the market here has been much improved by a further curtailment of imports from Mexico and South America.

Diesel Oil

Routine activity prevailed in this division of the market throughout the week, with sellers continuing to quote $1.65 per barrel, bulk f.o.b. terminals, and $1.71½ per barrel f.o.b. within harbor limits. Demand was reported rather quiet in the bunkering field. For industrial consumption, tank car delivery, the market remains held at 4 cents per gallon for oil showing a range of 26 to 30 degrees gravity.

Gas Oil

The posted price for 28 gravity minimum gas oil continues unchanged at 4 cents per gallon, tank cars, f.o.b. terminals, with demand holding up well on contract deliveries, but spot trading quiet. With gas oil available at the Gulf under 2¾ cents per gallon, however, and at less than 2 cents per gallon f.o.b. California ports, the stability of the present quotation here would appear threatened.

Paraffin Wax

Domestic business was a little more active last week, and the market was in slightly firmer position. For prompt shipment sellers were quoting at 3 cents per pound for 120-122 a.m.p., 3⅛ cents for 125-127 a.m.p., 3½ cents for 130-132 a.m.p., 4¼ cents for 133-135 a.m.p., and 4½ cents for 135-137 a.m.p.

Refiners in this territory are drawing a sharp line between sales for domestic consumption and for export, and are closely checking shipments to insure against sales for export reaching consumers in this country. Export quotations for fully refined grades of wax are as follows: 123-125 a.m.p., 2⅞ cents; 125-127 a.m.p., 3 cents; 130-132 a.m.p., 3½ cents; 133-135 a.m.p., 4¼ cents; and 135-137 a.m.p., 4⅝ cents per pound.

Petrolatum

There were no changes in quotations reported in this division of the market last week, although demand was slightly more active. The reductions in posted prices for eastern crudes, it was felt, would probably militate against the advance in petrolatum quotations which it was understood refiners in this area had been contemplating.

Lubs

While a substantial volume of export business in cylinder oils was reported during the preceding week, last week's market was less active, and the reductions in eastern crude quotations was believed to have halted the upward surge of cylinder oil quotations. Domestic demand, however, was slightly better.

Refiners reported an improved inquiry for natural oils, and it was intimated that an early price increase in both red and pale oils might be looked for.

Exports and Imports of Refined Products; Receipts of California Oil in the East

NEW YORK, May 15.—Gulf oil export markets were again ragged during the past week, with a minimum of new business reported, and considerable uncertainty still existing as to actual price levels. Early in the week a cargo of between 70,000 and 75,000 bbls. of 64-66 375 endpoint gasoline was booked for June lifting for France at 3¼ cents per gallon, but this sale appeared to clear the market of distressed motor fuel, and for the remainder of the period the market was quoted at 3⅜ to 3½ cents per gallon for the June position, with refiners reluctant to quote July exports. U. S. Motor gasoline, however, could be bought at 3¼ cents a gallon for export, with a possibility that this price might be shaded, but buying interest throughout the week appeared to be centering on 64-66. Kerosene for export remained quotably unchanged throughout the period, with little buying interest in evidence.

Petroleum Exports

The following table shows exports of principal refined petroleum products reported from the port of New York during the three weeks ending May 6 (all figures in gallons unless otherwise noted):

	Week ended		
	May 6	Apr. 29	Apr. 22
Gasoline	71,000	225,000	33,000
Naphtha	627,000	6,000	.....
Kerosene	12,000	38,000	10,000
Fuel and gas oil	28,000	1,000	2,000
Lub oil	5,130,000	1,150,000	1,990,000
Pet., refined	230,000	190,000	22,000
	Pounds		
Petrolatum	.....	25,000	24,000
Paraffin wax	2,721,000	2,792,000	1,375,000
Refined	365,000	172,000	2,350,000
Scale	.....	210,000	75,000
Lubricat'g grease	910,000	435,000	605,000

Lubricating oil export figures were considerably increased by several inter-company shipments during the period, as well as increased spot buying preceding the recent sharp increase in cylinder oil quotations, the material involved in these transactions just beginning to move out in substantial quantities. While export markets have been quite firm on all products locally during the past few weeks, the general reductions in crude oil quotations last week tended to make for a slight reaction in market sentiment, and buyers were quick to take advantage of this situation. Toward the latter part of the week, export inquiry had subsided, and foreign buyers were again holding off the market, pending further developments in the price situation. Export sellers, however, were not inclined to make concessions, and at the close of the week were still holding the market firm on all grades.

Imports

Import movement continued to fall off, in line with the reported curtailment of importing schedules on the part of the major companies. Total imports of crude and refined oil at the principal United States ports for the week ended May 6 were 506,000 barrels, a daily average of 72,286 barrels, compared with 921,000 barrels, a daily average of 131,571 barrels for the previous week and a daily average of 126,143 barrels for the four weeks ended May 6. Imports for the month of April averaged 132,367 barrels daily, and for March 165,290 barrels per day.

All of the imports for the week ended May 6 came in through New York, and consisted of 300,000 barrels of crude oil and 206,000 barrels of fuel oil. Reports in importing circles indicate that movement of foreign oil to Atlantic and Gulf Coast ports will continue light, accompanied by further increases in operations of refineries in the Caribbean area.

California Oil Receipts

Receipts of California crude and refined oil at Atlantic and Gulf Coast ports for the week ended May 6 totaled 267,000 barrels, a daily average of 38,143 barrels, compared with 523,000 barrels, a daily average of 74,714 barrels per day, for the previous week and a daily average of 40,179 barrels for the four weeks ended May 6. Details follow:

	Bbls. of 42 gals.
At Atlantic Coast Ports—	
Baltimore	32,000
Philadelphia	117,000
Others	55,000
Total	204,000
Daily Average	29,143
At Gulf Coast Ports—	
Port Arthur	63,000
Total	63,000
Daily Average	9,000
At Atlantic and Gulf Coast Ports—	
Total	267,000
Daily average	38,143
Daily average four weeks	40,179

The week's receipts of California oils were made up of 149,000 barrels of gasoline, 63,000 barrels of fuel oil, and 55,000 barrels of kerosene.

At the close of the week one cargo of California oil was reported afloat for Atlantic Coast ports, this being the Standard Oil Company of California tanker S. C. T. Dodd with 80,000 barrels of kerosene consigned to Seawaren, N. J., and Fall River, Mass.

Chicago Area Adjusting Itself to New Conditions Brought About by Lower Consumer Prices

By R. C. CONINE
Chicago Bureau, The Oil and Gas Journal

CHICAGO, May 15.—While a number of refiners who have wide marginal contracts with jobbers are complaining that recent downward price revisions in the tank wagon and service station markets in the territory have brought chaos, it becomes more apparent daily that Standard Oil Co. (Indiana) is not in the least confused in its ideas about the proper method of eliminating cutthroat competition. There are numerous indications that this major company's actions are not matters of temporary expediency, but are steps in a carefully weighed program to restore the sanity which fled with the multiplication of "tin-pot" refineries and marketing outlets.

Observers believe that the steps involved in this reconstruction program are as follows: Revision of basic refinery prices in line with Oklahoma Group 3 postings; adjustment of service station and tank wagon prices to new basic refinery price; elimination of small dump and commercial discounts off tank wagon and service station postings, respectively; shrinkage of marginal spread in business to resellers to maximum of 3 cents under the tank wagon price; shrinkage of quantity discount allowance to dealers by a cent or more. As most of the marginal spread contracts in this district are predicated on current Q.D.A.'s named by the Indiana Standard company, a reduction in these allowances will give some relief to refiners who must continue to deliver gasoline at 5 to 6 cents under the current tank wagon price. A boost in crude oil prices will enable a number of refiners to cancel unfavorable marginal contracts in which such action is made permissible when the gasoline tank car price falls below the price of 2 gallons of crude oil of a specified gravity from a certain field. With the present crude oil markets (36 degrees gravity) the gasoline tank car market would have to fall to 1.19 cents, Group 3.

The Indiana Standard company, according to President E. G. Seubert, "is undertaking to iron out the inequalities in adjoining markets, which have developed out of local price cut conflicts and to level all our price on as normal and equitable a basis as possible." As price cutters, principally those who are reselling wide marginal guarantee materials, continue to undersell the major and semimajor companies by 2 cents, making the price in Chicago 6.6 cents a gallon on the regular grade exclusive of taxes, the assumption is natural that the price cutters' margin of profit has not been affected, and will not be affected until the marginal contract is terminated or the supplier of the gasoline goes to the wall. Service station prices posted by "Triple-A" accounts of two majors indicate a net back to the refiners, under the 3.5-cent Q.D.A., of 0.158 cent a gallon, Group 3.

The action of Standard Oil Co. of New York, Inc., in setting up a new gasoline marketing policy in its territory under which prices will be made to fluctuate directly with changes in the Gulf cargo gasoline markets, is thought to be a forerunner of similar action by other majors in the territory which has been relieving the Mid-Continent territory of considerable East Texas gasoline. These changes in the East and Middle West areas, observers say, presage an overabundance of gasoline in the mid-southern states. The accompanying table shows freight rates from four refining points to 11 consuming centers:

(Figures in cents)

	Wood River	East Chicago	Lemont	Okla. point
Chicago	1.22	0.231	0.327	2.44
E. Chicago ..	1.22	0.182	0.290	2.44
Decatur	0.76	1.12	1.12	2.41
E. St. Louis..	0.26	1.22	1.22	2.05
Evansville ..	1.45	1.55	1.85	2.77
Mason City..	0.96	1.12	1.12	2.41
Peoria	1.02	1.02	1.02	2.41
St. Louis ...	0.36	1.22	1.22	2.05
Green Bay ..	2.01	1.22	1.22	3.01
Madison	1.71	0.96	0.96	2.84
Milwaukee ..	1.71	0.583	0.583	2.67

Part of the gasoline freight advantage seen for some points is reduced by additional crude oil transportation charges. Although pipe line and barge movement of petroleum and refined products figures largely in refining and marketing operations, the Group 3 freight rate is generally taken as a constant, along with state and Federal taxes, while variables are the basic refinery price of the refined products, the margins of profit available to jobbers and dealers, and cost considerations such as rental, hauling, advertising, etc.

Contract Considerations

Business, the marketing divisions say, is poor in the spot market and good (in volumes) on contracts. Needless to say, refiners are not looking for new contract business. With the 8.6-cent price on the regular grade in Chicago, the net back to an Oklahoma refiner (on his own admission) is 1.83 cents a gallon on business taken on a contract giving a guaranteed margin of 5 cents with top open and split below. The invoice price on a 5-cent flat margin would net back 1.16 cents, with today's average price of 2.5 cents, Group 3, on the regular grade. This contract is predicated on a 3.5-cent Q.D.A. in Chicago, and whatever reduction is made in the Q.D.A. goes into the refiner's profit column, such as it is.

Based on Group 3

Market observers in Chicago district point out that Standard Oil Co. (Indiana) has revised its basic refinery gasoline prices at all its refining points to meet Group 3 competition. In doing this, the company makes the price at which gasoline is billed out of its refineries to be marketed at its own or controlled stations identical with the price it makes on tank car sales in the open market in competition with other tank car sellers. This amounts, practically, to basing the service station and tank wagon price structure on the Group 3 gasoline tank car market. It appears that the objective is the establishment of a natural set of price differentials on the basis of the Group 3 refinery price. Figures examined indicate that jobbers and dealers are not going to continue to take all the refiner's profit, and more, if Standard carries out its indicated program. The day when dealers could give away half of their profit and still make more per gallon than the most sanguine refiner hoped to make, may be over. At any rate, the movement is on foot to make the dealer glad to make a quarter of a cent a gallon.

The marketing divisions, and the oil company executives have complained for years that competitors have been "offsetting" service station locations until there is 75 per cent more marketing outlets than can be operated profitably. If the inducements to go into the gasoline retail business are restored to a sensible level based on the distribution of gallonage among what may be considered a normal number of service stations, the process of eliminating wasteful outlets will be automatic, or at any rate, inevitable.

Gasoline Tank Car Markets

Refiners are reluctant to commit themselves on any deals until they can see what is ahead in the matter of Federal control on one side, and inflation of currency on the other. There are more inquiries for regular and premium grade gasolines, and prices on these materials are somewhat higher, although buying activity cannot be said to be anything like what it should be for this time of year. Usually there is a tank wagon service station advance at this time, and the fact that prices were reduced rather than advanced has apparently dazed most marketers and jobbers. Prices on the open markets cannot compete with those available on contracts. The steadiness in price in the gasoline tank car markets in the face of many adverse developments leads to the hope that the bottom has been reached definitely. Sentiment which has grown from recent developments is to the effect that it is up to the refiners to "write their own tickets."

Monday's gasoline tank car quotations showed an advance of a quarter of a cent in the regular and premium grades. It is very likely that in such states as Nebraska, where strict laws penalize false claims of premium qualities in gasolines, the higher antiknock gasolines will command a definite premium in price in the tank car markets. Buyers obtaining specification materials under the C.F.R. motor method of testing are having to pay three-eighths of a cent more for the regular grade and five-eighths of a cent more for the premium grade. The regular is quoted at 2⅜ to 2⅝ cents, and the premium grade is offered at 2⅝ to 2⅞ cents. A comparatively large portion of the third grade material is still going as low as 2 cents, but the top has advanced to 2¼ cents. An eighth of a cent advance is also noted in the 60-62 400 endpoint gasoline, while the 64-66 375 endpoint material remains unchanged at 2⅜ to 2½

(Continued on Page 38)

Do You Remember?

From The Oil and Gas Journal Files

25 Years Ago

May 18, 1908

J. W. Lee, noted eastern lawyer and independent oil leader dies in Pittsburgh, Pa., on May 11, aged 62 years.

The Indian Territory Illuminating Oil Co.'s blanket lease on 685,000 acres of Osage land in Oklahoma will run out in seven years. Most of it has been subleased for oil but the company reserves all the gas rights. The Indian Territory Illuminating Oil Co.'s present gas production is estimated at 300,000,000 feet per day.

Joseph Seep celebrates his seventieth birthday. Friends and associates tender Mr. Seep an anniversary dinner in Titusville, Pa., and among the speakers are H. H. Rogers, Calvin N. Payne and P. C. Boyle. A letter of congratulation from John D. Rockefeller, who is a year younger than Mr. Seep, is read.

South Texas oil producers are aroused at the prospect of a reduction of freight rates on Oklahoma crude oil into Texas points, and W. S. Farish and I. R. Bordages, Gulf Coast operators, are sent to St. Louis to see what action the railroads intend to make.

20 Years Ago

May 22, 1913

Gasoline in Aberdeen, Scotland, sells for 42 cents per gallon, and is going higher.

Henry M. Flagler, age 83 years, one of the pioneer members of the Standard Oil Co. group, died at his home in West Palm Beach, Fla., on May 20. Mr. Flagler fell from his veranda some time ago, which was primarily responsible for his death.

Capt. James C. Gibney, veteran oil producer, dies in Olean, N. Y.

Capitalists in Oklahoma City, Okla., have raised $3,000 towards a fund with which to make a test for oil in Oklahoma County. The money is being subscribed in $1 units.

After three years of wildcatting in DeSoto Parish, Louisiana, and the expenditure of over $1,000,000, a 1,000-bbl. well has been completed in Section 2-12-12.

10 Years Ago

May 17, 1923

Mammoth Oil Co. completes a 5,000-bbl. well on Teapot Dome, in the Wyoming Field.

Santa Fe Springs Field in California is producing 240,000 bbls. per day.

Overproduction of crude is unsettling crude market prices and also values of oil stocks in the New York exchanges. Refined products sales are steadily increasing, but there is a growing feeling that big fields should curtail their output.

William Hasson, pioneer Oil City, Pa., banker and oil producer, dies at 90 years of age.

The gross production in Oklahoma in the first quarter of 1923 shows Gypsy Oil Co. with 3,489,815 bbls.; Comar Oil Co. (Marland and Shell), 2,798,219 bbls., and Skelly Oil Co. 2,307,362 bbls. No other company produced as much as 2,000,000 bbls. during the period.

Pennsylvania Grade Crude Oil Lowest in Price in Many Years

The Oil City Derrick finds that the recent reduction in the posted prices for Pennsylvania Grade crude oils brings prices down to a level they had not reached in many years. In the Bradford and Allegany Fields in which the most northerly of the Pennsylvania Grade pools are located, the present price of $1.27 per barrel, had not been reached since May 27, 1905, or 28 years ago. The Oil City-Butler-Titusville district crude reached a similar price level on September 24, 1900, when it sold for $1.20 a barrel and a low of $1.05 was reached on November 13 of that year.

In the southern districts a search for a similar price level led clear back to the nineteenth century. Southwest Pennsylvania crude now sells for 97 cents a barrel, the first time since August 15, 1898, it has reached that low figure. Eureka at 92 cents a barrel goes back to the price prevailing in West Virginia on July 25, 1898, and Buckeye at 77 cents a barrel reverts to the southeastern Ohio price level of March 17, 1898.

The Pennsylvania Grade price reduction came at a most inopportune time, just when refined market prices showed signs of definite stiffening and were inching upward toward possibility of marketing at a profit. Marketers were unprepared to say Tuesday just what reaction would follow the crude price cuts, but they were fearful of losing what ground had been gained in the past two weeks.

Allege Fraud in Disposal of Crude Oil by Bandini Co.

LOS ANGELES, Calif., May 15.—Alleging fraud through the disposal of crude oil, a group of stockholders of the Bandini Petroleum Co. this week brought suit seeking an accounting and a judgment for $4,260,726. In addition to the Bandini company the Wilshire Oil Co., Inc., and a group of officials of the two companies are named as defendants. The two companies, it is charged, have an interlocking directorate. The Wilshire company operates a 20,000-bbl. refinery at Vernon, California, and the Bandini company is a producing concern.

In their petition, the plaintiffs allege that since July 26, 1928, the Bandini company delivered to the Wilshire company approximately 6,000,000 barrels of crude oil, a portion of which was paid for, but that the amount asked as a judgment is still due. Officials of the companies concerned have denied all the charges contained in the petition. The Wilshire company is one of the largest independent refiners and distributors in Southern California.

JERSEY AGE LIMIT

The Standard Oil Co. of New Jersey has announced that effective July 1 all male employes at the age of 60 years will be retired from active service. This rule can be modified, under special conditions, to retain employes up to the age of 62. Approximately 900 employes will be affected. The action was taken because the company finds itself overstaffed despite its adoption of the five-day week.

Heretofore the normal age for retirement has been 65, with retirement optional for employes at the age of 60 who have served the company 35 years. The new policy applies to management as well as employes and if generally adopted by subsidiaries, the company explained, would result in the retirement of more than 500 men past the age of 62. In addition, there are 400 men between 60 and 62 who will come within the stipulation of the modified retirement rule.

A number of executives and directors fall within the new age limit, including C. G. Black, E. M. Clark, J. H. Senior, H. Riedmann, all directors, and C. O. Stillman, president of Imperial Oil, Ltd.; C. T. White, secretary, and L. E. Freeman, comptroller.

World's Crude Oil Balance Sheet for Year 1932

By V. R. GARFIAS and R. V. WHETSEL
Foreign Oil Department, Henry L. Doherty Co., New York

The world's production of petroleum in 1932 was close to 1,305,000,000 bbls., and it is estimated that approximately the same volume was run through refineries. Imports aggregated about 203,000,000 bbls. and exports 210,000,000 bbls., the 4,000,000 odd barrels necessary to balance these figures representing oil taken out of storage.

The United States imported more crude than it exported and refined more than it produced, the deficiency being made up by a reduction of stocks of close to 20,000,000 bbls.

Russia, owing largely to inadequate refining facilities, put into storage during the year about 10,000,000 and exported close to 4,000,000 bbls. of crude.

Practically the entire production of Venezuela was exported as crude to Dutch West Indies and of this less than 9 per cent was re-exported as crude; the balance was run through the refineries at Aruba and Curacao.

The bulk of the Rumanian production was refined within Rumania. About one-fourth of the Persian production was exported as crude and the balance refined at Abadam at the head of the Persian Gulf. The production of the fields of Dutch East Indies and Sarawak was mostly refined locally and only about 20 per cent was exported. Of the oil produced in Mexico, about 28 per cent, largely heavy asphaltic grade, was exported. Practically the entire output of the Colombian fields was exported as crude, while the oil produced in Argentina, British India, Poland, Egypt, Japan and Germany was all refined and consumed locally.

Important refining activities are being conducted in countries that have little or no crude production of their own. This is the case in the United Kingdom, Canada, France, Japan, Australia and Germany in line with the policy of diverting to the consuming country whatever profit or advantage there may be in carrying on refining operations at home.

The following table summarizes the crude oil movements during 1932. The figures (in thousands of U. S. barrels), although subject to revision, are thought to give, nevertheless, a true picture.

WORLD'S CRUDE OIL BALANCE SHEET FOR 1932

	Production	Imports	Exports	To local refineries	To local consumption and storage
United States	781,940	44,688	37,393	819,997	*30,857
Russia	155,250	.....	3,850	141,400	10,000
Venezuela	116,300	.....	113,489	2,811	....
Rumania	54,160	.....	1,039	51,070	2,051
Persia	49,470	.....	12,335	37,135	....
Dutch East Indies	39,000	.....	7,250	31,750	....
Mexico	32,305	164	5,193	26,068	3,703
Colombia	16,417	.....	15,142	968	307
Argentina	13,000	1,860	.....	14,860	....
Trinidad	10,100	.....	2,522	7,578	....
Peru	9,900	.....	5,208	4,692	....
British India	8,430	.....	.....	8,430	....
Poland	4,115	.....	.....	4,115	....
Sakhalin Island	2,800	.....	2,390	.....	410
Sarawak	2,480	.....	762	1,638	....
Egypt	1,799	701	.....	2,491	....
Japan	1,630	5,122	.....	6,752	....
Germany	1,617	2,048	.....	3,665	....
Ecuador	1,595	.....	1,348	155	92
Canada	1,057	28,080	165	28,972	....
Iraq	910	.....	.....	910	....
France	528	7,245	.....	7,773	....
Italy	210	630	.....	840	....
Czechoslovakia	199	860	.....	1,059	....
Bolivia	44	.....	.....	44	....
Cuba	12	650	.....	662	....
Dutch West Indies	.....	94,561	6,250	88,311	....
United Kingdom	.....	10,536	.....	10,536	....
Australia	.....	2,537	.....	2,537	....
Austria	.....	900	.....	900	....
Holland	.....	679	.....	679	....
Yugoslavia	.....	410	.....	410	....
Norway	.....	216	.....	216	....
Sweden	.....	197	.....	197	....
Hungary	.....	103	.....	103	....
Belgium	.....	60	.....	60	....
Latvia	.....	44	.....	44	....
Others	48	.....	48	.....	....
Total	1,305,633	302,381	210,379	1,301,869	4,234

*Decrease.

SALT WATER IN CORCOVADO

NEW YORK, May 15.—Salt water has appeared in the Corcovado oil pool in Mexico, where Gulf and Mexican Seaboard recently brought in new producers, and output of the field has declined from 15,000 bbls. per day to 8,220 bbls. daily. Total crude production of the Tuxman and Panuco Fields during the closing week in April averaged 39,370 bbls. per day, compared with a daily average of 72,243 bbls. for the previous week.

ACQUIRES VENEZUELA ACREAGE

NEW YORK, May 15.—Standard Oil Company of Venezuela (subsidiary of the Standard Oil Company [N. J.]) has acquired acreage held by Pedernales Oilfields, Ltd., and Tucupita Oilfields, Ltd., both subsidiaries of the British Controlled Oilfields, Ltd., in the Orinoco Delta. Standard of Venezuela is completing the survey of this acreage which had been under way by the two companies from which the land was acquired.

DEATH OF R. C. WOODS

A nitroglycerin explosion at a magazine of the Independent Eastern Torpedo on the outskirts of West Tulsa on Monday evening ended the life of a veteran shooter R. C. Woods, age 60 years, who was blown to pieces.

Commission to Continue 750,000-Barrel Allowable

AUSTIN, Tex., May 16.—After its hearing Monday the Railroad Commission of Texas Tuesday was preparing an order continuing in effect the former 750,000-barrel daily allowable for East Texas pending decision of the Hunt Petroleum test case in Federal court on the new order.

BEE OIL & REFINING CO.

The Bee Oil & Refining Co. has completed its executive organization and expects to place its 1,000-bbl. topping unit at Pettus, Tex., in operation soon. Harry N. Carter, president, will also head the sales division of the company, while Mack V. Reeves, vice president, will be general manager. Carl L. Reeves has been named secretary and treasurer and will also manage retail sales.

DEATH OF MRS. HUBBARD

Mrs. Minnie R. Hubbard, wife of G. E. Hubbard, died suddenly in Louisville, Ky., on May 7. She was buried in Dallas, Tex., May 9. Mrs. Hubbard is survived by her husband, a son, Ray E. Hubbard, and a daughter, Mrs. Hazel Moran.

Late Fields

OKLAHOMA

Recommendations were made to the Corporation Commission, May 17, that the Simpson sand zone in the Oklahoma City Field be divided along Sections 22, 23, 24-11-3w, and that the percentage of decline be figured separately. Producers and engineers testified that it would be injurious to order open flow tests on wells offsetting water wells. Potentials of 115 wells south of the line showed a decline of 30 per cent, while 62 wells north of the line declined 50 per cent.

Winona Oil Co. and others' No. 1 Harris, in Section 18-7-8, north of the Fish Pool, in Seminole County, found the top of the Woodford shale at 3,930 feet and was drilling deeper to test the Wilcox sand at 4,080 feet.

Gypsy Oil Co.'s No. 1 Hulsey, in Section 17-9-6, made 178 bbls. of oil in nine hours from the Wilcox sand at 4,239-57 feet. Same company's No. 3 Rentie, in Section 17-9-6, found the Wilcox sand from 4,236-49 feet, where oil rose 800 feet in the hole.

Gypsy Oil Co.'s No. 2 Gray, NW cor. SW Section 25-6-4, in the West Konawa Pool, is a location.

Carter Oil Co.'s No. 1 Conrad, in Section 35-11-6, in the Keokuk Falls area, of Seminole County, found the Viola lime at 4,309 feet and was landing 8-inch casing at 4,067 feet. It will be drilled to the Wilcox sand.

KANSAS

Darby Petroleum Corp.'s No. 1 Brucker, NE cor. Section 24-19-1w, a wildcat about 2½ miles east of production in the Ritz-Canton Field, was dry in chat at 3,110 feet and will be drilled to the deeper sands.

Skelly Oil Co.'s No. 1 Schmidt, in Section 17-22-3w, extended production in the Hollow Pool, in Harvey County, one location to the northwest. The well made 795 bbls. of oil in 18 hours from the Hunton lime at 3,431-55 feet.

Frank Hollow and others' No. 2 Schmidt, in Section 17-22-3w, made 52,000,000 feet of gas from the chat at 3,222 feet. The crew was mudding off the gas to drill to the Hunton lime.

Continental Oil Co.'s No. 1 Paul, in Section 17-22-3w, was swabbing 145 bbls. of oil from the Hunton lime at 3,481-3-506 feet. It also made 120 bbls. a day from the chat at 3,187-3,240 feet.

Derby Oil Co.'s No. 2 Schmidt, in Section 17-22-3w, made 74,000,000 feet of gas from the chat at 3,250 feet. The gas will be mudded off to drill to the Hunton lime.

Vickers Petroleum Co.'s No. 1 Schecht, SE cor. NE Section 20-20-10w, in the Schurr Pool, Rice County, was spudding. The test is a quarter of a mile west of production in that pool. It is the only test drilling in the Schurr Pool.

Rose Spring Oil Co. and others' No. 1 H. E. Ediger, NE cor. SE SW Section 16-21-3w, in the Voshell Pool, in McPherson County, is estimated to be an 800-barrel well from the sand at 3,391-3,433 feet. It swabbed 400 bbls. of oil in 10 hours.

Magnolia Petroleum Co.'s No. 1 Siemens, NE cor. NW NE Section 33-22-3w, in Hollow Pool, in Harvey County, made 2½ bbls. of oil an hour from the Kansas City lime, and was drilling deeper.

SOUTHWEST TEXAS

SAN ANTONIO, Tex., May 16.—Crude Oil Royalty Co.'s No. 1 Allen in northeastern Jim Wells County at 2,548 feet blew out Sunday and ran wild making gas but later bridged. It is near the two wells which constitute the Sandia Field but is producing at about 2,900 feet. Plymouth Oil Co.'s No. 1 Reams, south of the Coyle-Concord discovery well in Colorado County, at about 6,200 feet has what it supposed to be the Conroe sand with pretty good showing.

TAX GASOLINE PUMPS

The California Assembly has passed Assembly Bill No. 1,618, introduced by Assemblyman Craig, providing for a state tax of $1 per year on all gasoline pumps.

Fluid Friction Principle Is Successfully Applied to Brakes for Drawworks and Sand Reels

By L. G. E. BIGNELL
Petroleum Engineering Editor

In drilling holes with either cable tools or rotary outfits enormous power is developed in the lowering of the suspended loads and this power must be absorbed and dissipated by the braking mechanism. In cable tool wells bull wheels are used to lower and lift the string of drilling tools, and a calf wheel is used for handling the casing. For bailing, a sand reel is necessary and with deeper drilling each piece of apparatus is being subjected to ever increasing demands on the braking mechanism.

In the rotary drilled well the lowering and hoisting of drill pipe is an important operation and calls for good brakes upon the drawworks to control the loads. Also in running strings of casing heavy equipment is required. This may be handled with the drawworks or with calf wheels set in the derrick for this particular job.

Because of the fact that the tendency during recent years has been to drill holes to greater depths in order to penetrate into more deeply buried oil formations the actual time required to lower or hoist tools has been very materially increased. The pieces of apparatus handled are also much heavier and the combination of added weight and longer time intervals during which the brakes are used has thrown greater strains upon the brakes and has presented many serious problems to the designing engineers.

On the bull wheels many devices have been tried to reduce the wear on the brakes. Two brake drums have been used and wider and thicker brake bands have also been applied. The calf wheel design has also been such as to add braking power to that piece of equipment.

High Speeds Are Common

For the sand reel where very high speeds have been common in running the bailer to depths below 5,000 feet the problem of furnishing economically operated brakes has received much thought on the part of manufacturers. Speeds of 3,000 feet per minute in lowering heavy bailers has been checked frequently and it is probable that even higher speeds have been attained at many locations.

Because of the fact that in every lowering operation the driller must control the speed of descent by a continual application of pressure on the brakes very rapid wear of brake linings has been common. The heat generated has also given trouble in cracked brake drums and in many instances the drum surface has been scored which has had a tendency to wear linings more rapidly.

What is true about hoisting equipment on the cable tool well is equally true in regard to brakes on the drawworks of the rotary rigs. While the stands of drill pipe handled are individually much shorter than any equipment used around the cable tool rig the added weight of long strings of drill pipe run in and pulled out at frequent intervals has created conditions unfavorable to long brake lining and brake drum life.

Remedies Tried

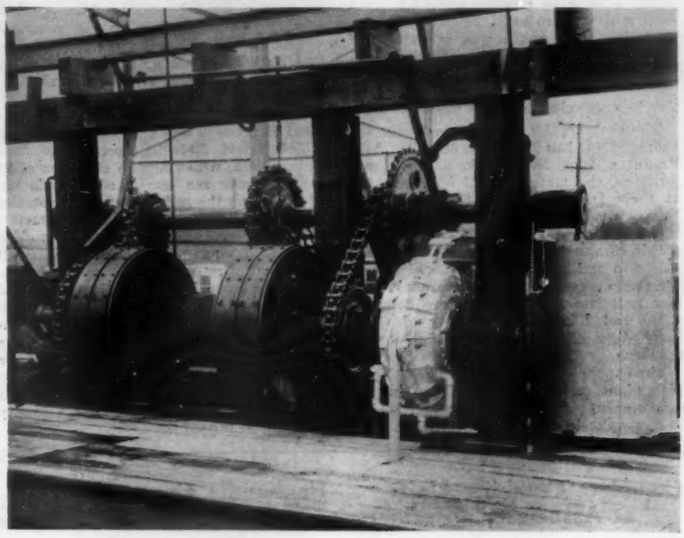
During the past few years while holes were being drilled deeper and deeper the designing engineers for manufacturers have tried many different types of equipment to secure better service for the brakes. Water cooling has been used extensively with some success, but there are also disadvantages connected with this practice.

Changes in lever systems to bring about better application of power to brake bands have also been tried and have met with some success. But with all of these types of design the fundamental difficulty of securing a combination of brake drum and lining that will withstand wear and dissipate heat has been hard to find. Consequently replacement costs for brake lining have been an important item of drilling expense.

It is a well-known fact that energy cannot be created or destroyed, and in any type of brake most of the energy developed by the descending load is converted into heat. In most designs this heat is generated in the band brake and causes a temperature increase in the drum and band. This heat then is dissipated into the atmosphere or into the water, if the band is water-cooled.

The heat that is generated at the friction surface passes through the drum and band before it gets to the cooling medium. The rate of heat transfer through the metal is not sufficiently rapid to prevent temperatures considerably higher than the cooling medium temperature to accumulate in the metal. This accumulated heat causes heat checks in the drum and also heats the brake and its lining. Heating the brake lining will usually deteriorate it quickly and it will wear rapidly or become so dry that it is ground to dust by contact with the brake drum surface.

While this wear dissipates some of the heat and in that manner absorbs some of the energy developed by the falling body it has been found expensive because of the necessity of frequent replacements on equipment used on deep wells.



Test installation at the plant of the Parkersburg Rig & Reel Co., Parkersburg, W. Va., showing set-up of hydromatic brake with Oil Well Supply Co. drawworks with tank for cooling water at right

SAFE WORKING LOAD FOR WIRE LINE

Size	Working load	Max. wgt. of drill pipe using—5 lines	7 lines	9 lines
¾	11,600	58,000	81,000	104,400
⅞	15,500	78,000	109,200	140,400
1	20,000	100,000	140,000	180,000
1⅛	24,800	124,000	173,600	223,200

Hydromatic Brake

Having given much time and spent considerable money in trying out various types of band brakes the engineering department of The Parkersburg Rig & Reel Co. finally turned to an entirely different principle of braking for a solution of this problem. This new type of brake suitable for use with any piece of apparatus used in drilling wells by cable tools or rotary methods, is called the "hydromatic brake" and utilizes fluid friction to absorb power developed, the same fluid also absorbing and carrying away the heat generated by this braking action.

The principle employed has been used in dynamometers and may be explained in a general way by comparing the action of the brake to the dragging of a bucket fastened to a boat by a rope. The resistance of the bucket is dependent upon the speed of the boat. The hydromatic brake is designed to create resistance by revolving a rotor with vanes inside of a fluid-filled stationary hollow case with vanes cast on its inner surface.

In this way turbulent flow of the fluid is created and this resistance is used to absorb the energy developed by the descending load. Turbulent flow is avoided as much as possible in pipe line design, or in well head connections, but it is utilized to control the rate of descent of a load in the hydromatic brake. This brake also acts as a governor and will prevent the load from descending out of control.

The resistance may be regulated so that high resistance will control heavy loads and by reducing the resistance the power absorbed by the brake will be decreased so that any desired resistance may be obtained for any load.

This type of brake cannot be used to actually stop and hold the load but such features are not required when this device is used in connection with bull wheels, sand reel or rotary drawworks because the driller must always bring the load to rest by some hand-controlled device. The usual type brake band controlled by a lever is used for this final stopping of the load.

Since the hydromatic brake absorbs the energy and controls the speed at the desired rate of drop, the only work required of the mechanical brake is to overcome the inertia of the load. This duty is so light that the mechanical brake will not become heated and the wear will be negligible.

Description of Brake

The accompanying picture and sketch show quite clearly the design and appearance of the hydromatic brake and also the manner in which it was mounted on the test rig. In field installations it has been mounted on shaft extensions.

In the sketch, Figure 1 shows an end view of the brake partly in section; Figure 2 is a sectional view, and Figure 3 is a section through the vanes along the line marked "x-x" in Figure 1.

The brake consists primarily of a rotor with pockets on each side separated by inclined vanes. This rotor is surrounded by a stator having corresponding pockets separated by vanes which oppose those in the rotor. As the names imply, the rotor rotates and the stator is stationary. The rotor is mounted upon a shaft that is carried in bearings in the stator case.

The hollow shell is filled with fluid piped from a tank set at some suitable place in the rig and this fluid is discharged at the top of the brake case and returns to the tank. It is not essential that water be used for the cooling medium. In cold climates where there is danger of freezing oil may be used for the cooling medium. Oil actually has an added advantage of increasing the resistance built up in the brake.

When the load is descending and the brake is in operation centrifugal force created by the rotation of the rotor throws the fluid to the outer circumference of the rotor, and into the pockets

(Continued on Page 100)

CAPACITY OF HYDRODYNAMIC BRAKE APPLIED TO DRAWWORKS

Load capacity—	No. lines	Drop in feet	Time drop (sec.)	Average H.P. developed	R.P.M. of drum	Primary control
345,000	9	100	20	3,130	540	Full
200,000	9	100	20	1,815	540	⅝ Full
130,500	9	100	20	1,185	540	½ Full
456,000	9	100	15	5,520	720	Full
265,000	9	100	15	3,200	720	⅝ Full
176,000	9	100	15	2,100	720	½ Full
100,000*	7	100	40	455	210	Full
100,000*	7	100	24	760	350	⅝ Full
100,000*	7	100	16	1,140	525	½ Full
172,000	7	100	24	1,308	350	Full
207,000	7	100	20	1,880	420	Full
272,000	7	100	15	3,340	560	Full
161,000	7	100	15	1,950	560	⅝ Full
107,000	7	100	15	1,300	560	½ Full
140,000	5	100	15	1,700	400	Full
82,000	5	100	15	985	400	⅝ Full
52,000	5	100	15	642	400	½ Full

*These ratings apply to drawworks with 18-inch diameter drum.

NEWS FOR PETROLEUM REFINERS

Eighteen Refiners in Western Texas Form Association

Organization of the West Central Texas Refiners' Association was perfected last week at a meeting of representatives of 18 independent refiners at the Petroleum Club, in Breckenridge, Tex. The members of the association operate refineries at several points in West and Central Texas.

E. W. Moutray of Abilene was elected president; L. C. Cozart of Graham, vice president, and Charles H. Clark of Breckenridge, secretary-treasurer. The directors elected included the three officers and G. D. Beall of Sweetwater, H. P. Down of Breckenridge, E. M. Corah of Cisco and A. A. Spencer of Albany.

It was decided to employ an executive secretary and an assistant to devote full time to the work of the association and a committee was named to take steps immediately toward getting a charter.

The paid workers will assist the officers and directors in carrying out the purposes of the organization, which are to help eliminate illegal manufacture and sale of gasoline and other refined products, to co-operate to the fullest in stopping the evasion of the gasoline tax, to inform the public of the high standard of products put out by the association members and to work out matters of common interest to the members. A detailed program of activity will be mapped out at once to be begun as soon as the charter is obtained.

Build Skimming Plants at Several Wyoming Points

CASPER, Wyo., May 15. — Argo Oil Co., which has 8,000 bbls. of crude in storage at Pilot Butte, in Fremont County, has contracted to sell part of its production to Paul Huber, who is building a 500-bbl. skimming plant here. The contract does not call for enough oil to operate at capacity and additional crude will be acquired elsewhere. The Argo company also has contracted part of its Pilot Butte production to Earl Connor, who will build a skimming plant at either Pilot Butte or Riverton. This plant will obtain part of its crude from the wells of the Big Four Oil Co. in Pilot Butte.

Another year's contract has been made by the Ohio Oil Co. and the Argo Oil Company for the sale of Lance Creek crude to R. D. Salsbury, who is building a skimming plant at Cheyenne. Salsbury also has a plant at Sheridan. The Ohio Oil Company has 100,000 bbls. in storage at Lance Creek and the Argo Oil Company 10,000 to 12,000 bbls. Oil from all these orders will be transported by truck.

ENGLAND INCREASES IMPORTS

NEW YORK, May 15.—Imports of crude and refined petroleum into the United Kingdom during the first quarter of 1973, according to the British Board of Trade, aggregated 492,700,000 gallons, as compared with 434,000,000 gallons in the closing quarter of 1932 and 447,600,000 gallons in the first three months last year.

Crude oil imports increased considerably, at 87,000,000 gallons, against 81,400,000 gallons in the first quarter last year, with gasoline imports also appreciably higher at 261,300,000 gallons, against 210,000,000 gallons.

To Install Large Vapor Phase Cracking Unit at Refinery of Mexican-Eagle

NEW YORK, May 15.—Compania Mexicana de Petroleo "El Aguila," S.A., (Mexican-Eagle), Mexican subsidiary of the Royal Dutch-Shell group, is installing a large Gyro vapor phase cracking unit, together with an absorption and stabilization plant, at its Tampico refinery. The company is also installing a large distillation unit, which will reduce heavy residue to produce charging stock for the new Gyro unit. The complete installation, with auxiliaries, when erected will represent a capital expenditure of approximately $1,000,000, and the entire plant is expected to be placed in operation in approximately nine months.

The contract for the equipment for the above plant has been placed with Alco Products, Inc., New York, and the majority of the material will be fabricated at their Dunkirk plant. Shipments will be started from the United States within the next three months and completed within the next five months. The construction and initial operation will be under the supervision of Alco company. The new unit is designed to produce between 1,000 and 1,500 bbls. per day of Gyro finished gasoline of unusually high octane number.

The expansion of Mexican-Eagle's Tampico plant marks a further step in the development of that organization, which is a completely integrated unit, with producing, pipe line, refining and marketing properties. Its Tampico refinery, which is now being thoroughly modernized, has a rated throughput capacity of 30,000 bbls. per day, and is connected by pipe line with the company's properties and with the Aguila refinery on the outskirts of Mexico City.

The Mexico City refinery and the pipe line linking that plant with the coastal producing fields were the last previous major expansion steps by the company.

The pipe line linking the coastal area and Tampico plant with Mexico City attracted widespread attention during its construction, owing to the numerous unusual features of the line. Running a total distance of 223.4 kilometers the line, which is of 10-inch pipe, starts from Palma Sola, which has an elevation of 92 meters above sea level, and ascends until it reaches the refinery at Atzcapotzalco (Mexico City) which is 2,243 meters above sea level. The entire line is welded and its laying presented two difficult problems; first, the question of hydrostatic pressure between Palma Sola and the point of maximum elevation, necessitating the careful spacing of pumping stations; and secondly, the viscosity of the oil to be run. On the latter stretch of the line, the entire problem depended upon the viscosity of the oil, with the line's capacity influenced more by viscosity than by gravity.

Complete Cracking Units at Associated's Refinery

The new cracking equipment started the latter part of last year has been completed at the Associated, Calif., refinery of the Associated Oil Co. The new unit, which was designed and installed by the E. B. Badger & Sons Co., is largely a duplicate of the first cracking unit built at the Associated refinery two years ago. The new unit adjoins the old one and will be operated jointly.

The new unit is a combination viscosity breaker and cracker, being designed to produce fuel oil of low viscosity as well as high octane gasoline. The rated reducing capacity of the unit is 10,000 bbls. and the cracking unit has a capacity of 4,000 bbls. daily. The latter is the Tube and Tank design. The refinery has a rated crude oil capacity of 58,000 bbls. daily.

Gulf Completes Removal of Refinery to Staten Island

The Gulf Refining Co. has practically completed the removal of refinery equipment from its Bayonne, New Jersey, plant to Staten Island, New York, where the company last year built a new plant. The Bayonne plant has been shut down for some time. It was built several years ago on a site used by the company as a bulk terminal. The plant at one time had a rated crude oil capacity of 30,000 bbls. daily with a 1,000-bbl. cracking unit.

Lack of space caused the company to decide to move the plant to Staten Island, which is a short distance from Bayonne. The new plant at present has a rated crude oil capacity of 15,000 bbls. daily. The plant furnishes gasoline and large quantities of fuel oil for distribution in the New York City territory.

Panhandle Company Combines Operations

WICHITA FALLS, Tex., May 15.—The Panhandle Refining Co. of this city has completed improvements at its local refinery which has added greatly to its efficiency. The principal improvement in the plant consists in combining the skimming and reacking operations in one unit.

The company for several years has operated Dubbs cracking equipment. This operation has now been combined with the crude topping operation so that by heat exchange with the hot liquid and vapors from the cracking operation part of the heat necessary to remove the light fractions from the crude charge are obtained. The heavier fractions are then cracked.

The entire operation, in which 3,500 bbls. of crude oil are refined daily, is continuous. The improvement has enabled the company to shut down a battery of shell stills formerly used for cracking. The change in equipment cost approximately $30,000.

McALLEN, TEX., PLANT

H. B. May, president, and Walter K. Campbell, vice president, of the Rado Refining & Producing Co., are operating their newly constructed 500-bbl. skimming plant at McAllen, Tex., and O. B. Stevens has been named secretary and treasurer. J. P. Ryan is superintendent of the plant.

COMPLETES COKE TIPPLE

The Shell Petroleum Corp. has completed a new petroleum coke tipple at its Norco (New Orleans) refinery. The new equipment includes a belt 550 feet long which can load barges at the rate of 90 tons per hour. The corporation expects to increase its coastal and Mississippi River shipments.

New Regulations Covering Sales to Governmental Units

WASHINGTON, D. C., May 15.—The Treasury Department in a letter addressed to Collectors of Internal Revenue and others concerned states that Article 9 of Regulations 44 approved June 18, 1932, is amended to read as follows:

"Art. 9. Sales to States or Political Subdivisions Thereof, or to the United States.—No tax will attach to the sale of gasoline or lubricating oils to States or political subdivisions thereof if (1) such articles are to be used in the exercise of an essential governmental function and (2) the sales are made direct by the manufacturer to the State or political subdivision thereof without an intervening sale to a dealer or distributor. Sales made to a dealer or distributor are subject to the tax even though the manufacturer may have knowledge that the articles are destined for ultimate use by, or resale to, a State or political subdivision thereof.

"In order that a manufacturer may make sales of articles to State or political subdivisions thereof without incurring liability to tax, a certificate must be furnished such manufacturer stating that the articles are to be used in the exercise of an essential governmental function, and the certificate must include an agreement that if any of such articles are used otherwise than in the exercise of an essential governmental function, or if any of such articles are resold to employes or others, the State or political subdivision thereof will report such fact to the manufacturer. The tax applicable to such articles shall be included by the manufacturer in his return for the month during which such report is made.

"A form of certificate which may be accepted by manufacturers for the purpose of making tax-free sales to States or political subdivisions thereof, when such certificate is properly executed by an authorized officer of the State or political subdivision thereof, follows:

(Date)

EXEMPTION CERTIFICATE

For Use by States or Political Subdivisions Thereof.

The undersigned hereby certifies that he is the (Title of Officer) of (State, City, etc.) and that the article or articles specified in the accompanying order are purchased for use by the (Department) in the exercise of essential governmental functions.

It is understood that the exemption from tax in the case of sales of articles to States or political subdivisions thereof is limited to articles purchased for use in the exercise of essential government functions, and it is agreed that where articles purchased tax free under this exemption certificate are used for purposes other than in the exercise of essential governmental functions or are sold to employes or others, the vendee will report such fact to the vendor.

(Signature) (Title of Officer).

Where it is impracticable to furnish a separate certificate with each order, the manufacturer may accept a single certificate covering all orders between given dates; such period, however, not to exceed one month.

Sales to the Government of the United States, the District of Columbia, or to the Government of a territory or possession of the United States are taxable, except as provided in Arts. 4 and 57.

TIMKEN

QUALITY REFINERY TUBES FOR TODAY'S EXACTING DEMANDS

Seamless tubes for the refinery industry have been raised to a new high standard of service through Timken metallurgical knowledge, experience and manufacturing methods.

From the making of the steel itself, through every stage of production to the testing of the finished product, Timken controls every manufacturing process, assuring uniformly high quality in every foot of tube.

Timken Steel is produced in the Timken steel plant under the direction and supervision of a corps of metallurgists whose combined experience covers every requirement of the refinery industry in special alloy and carbon steels.

Timken refinery tubes are available in all the usual sizes. Timken metallurgists will welcome an opportunity to work with you on your refinery problems.

THE TIMKEN STEEL AND TUBE COMPANY, CANTON, OHIO

Detroit Chicago New York Los Angeles Boston Philadelphia Houston Buffalo Rochester Syracuse

TIMKEN STEEL TUBES

NATURAL GASOLINE MANUFACTURE

D. C. Williams Is Elected President of Association

D. C. Williams, in charge of natural gasoline plant operations for the Continental Oil Co., was elected president of the Natural Gasoline Association of America on Tuesday of this week during the association's three-day convention in Tulsa. He succeeds S. S. Smith of the Shell Petroleum Corp., who has been at the association's head for two years.

W. E. Reardon of the Columbia Gasoline Corp., was elected a vice-president. Ray C. Wheeler of the General Petroleum Corp. of California and president of the California Gasoline Association, was also elected a vice-president. All directors of the association were re-elected without exception.

Refinery Natural Receipts Have Declined 14.8 Per Cent

Those refiners who draw upon the Mid-Continent natural gasoline plants for their supply have reduced the quantity taken in the first three months of this year by 14.8 per cent according to the Western Petroleum Refiners Association in its analysis of the Bureau of Mines reports.

The only area in which the refinery receipts of natural exceeded those of the same three months a year ago is the Oklahoma and Kansas group.

Following are the comparative figures over the periods in question:

MID-CONTINENT NATURAL GASOLINE STATISTICS—FIRST THREE MONTHS 1932 AND 1933
(Quantities in thousand gallons)

Stocks at Natural Gasoline Plants, March 31	First 3 mos. 1932	First 3 mos. 1933	Percentage change
Oklahoma	12,445	9,926	—20.2
Kansas	1,197	511	—57.3
Texas	10,253	9,781	—4.6
Louisiana	1,408	793	—43.7
Arkansas	248	114	—54.0
Total	25,551	21,125	—17.3
Production at Natural Gasoline Plants			
Oklahoma City	21,100	20,100	—4.7
Osage County	12,600	9,900	—21.4
Seminole	31,200	23,000	—26.3
Rest of state	37,900	31,000	—18.2
Oklahoma total	102,800	84,000	—18.3
Kansas total	7,300	6,209	—15.1
Panhandle	45,700	40,000	—12.5
North Texas	6,600	5,400	—18.2
West Central	23,450	20,000	—14.5
Rest of state	16,890	19,280	+15.2
Texas total	91,500	83,600	—8.6
Louisiana total	13,500	10,200	—24.4
Arkansas total	6,100	3,899	—25.5
Total	220,200	187,800	—14.7
Shipments from Natural Gasoline Plants			
Oklahoma	99,140	79,785	—19.5
Kansas	6,531	6,099	—6.6
Texas	87,252	80,207	—8.1
Louisiana	13,330	10,122	—24.1
Arkansas	5,054	3,350	—33.8
Total	211,307	180,063	—14.8
Stocks at Local Refineries, March 31			
Okla. and Kans.	1,344	1,134	—15.6
Inland Texas	253	126	—50.0
Coastal Texas	15,283	7,770	—49.2
N. La. and Ark.	219	336	+60.0
Coastal Louisiana	None	None	.....
Total	17,094	9,366	—45.2
Used by Local Refineries			
Okla. and Kans.	45,486	46,830	+3.0
Inland Texas	31,663	31,206	—1.5
Coastal Texas	28,224	25,830	—8.5
N. La. and Ark.	9,072	4,419	—51.4
Coastal Louisiana	10,794	2,814	—73.9
Total	125,244	111,090	—11.3
Local Refinery Demand (Receipts)			
Okla. and Kans.	45,631	47,049	+3.1
Inland Texas	31,710	31,164	—1.7
Coastal Texas	33,046	24,402	—23.9
N. La. and Ark.	9,030	4,572	—49.3
Coastal Louisiana	10,710	2,814	—73.7
Total	129,108	109,998	—14.8

Natural Gasoline Technical Committee Is Considering Many New Problems

By R. C. ALDEN
Phillips Petroleum Co.*

The progress of your technical committee during the past year has been greatly hampered by the inability of the committee members to leave more pressing work of their own companies. Nevertheless some committee work has been done.

The important work dealing with vapor lock characteristics of motor cars was delegated to the U. S. Bureau of Standards. Doctor Bridgeman will report the results of this work later in the meeting.

Early in the association year, the technical committee completed a pamphlet on blending which was submitted to the board of directors, who decided the oil industry had enough burdens without mutiny and restricted circulation to membership of the association.

In October, the advisability of studying plant losses against vapor pressure of product was thoroughly considered. Preliminary work of a theoretical nature was actually started when it became evident that too many factors of individual plant operation were involved to justify co-operative effort. It was the opinion of the technical committee that the prevailing commercial ratios are reasonably accurate, that any refinements would require elaborate investigations and would most likely add complications instead of leading to simplifications. The board concurred in these views and the subject was dropped.

A by-product of this work was a comparison of composition analyses on several widely varying samples of natural gasoline as determined in several laboratories. Although these samples were not as carefully safeguarded as they should have been, and therefore the results should not be too seriously considered, there were considerable discrepancies, particularly in separating the isomers from the normal hydrocarbons.

These differences suggest the possibility that some benefit might accrue from co-operative work leading to standardization of such sampling and analytical procedure.

Considerable work was done early in the year on the effect of minor variables on Reid vapor pressure results. One interesting test made use of Stoddard solvent. Because the vapor pressure of Stoddard solvent is low, the effects of minor variables are greatly magnified. In this work, manipulative as well as normally unavoidable variables were studied. It was found that the manipulative error of a dry bomb had far more influence than the unavoidable errors. Other tests had to do with the effects of air in solution, composition and liquid temperature. No conclusions or suggestions were avail-

(Continued on Page 38)

*Report of Technical Committee before convention of the Natural Gasoline Association of America in Tulsa, May 15-17.

California Posts Natural Gasoline Prices in the Field

Inaugurating a new policy of posting prices to be paid currently for natural gasoline purchased, the Union Oil Co. has issued a graduated price schedule predicated on the quality of casinghead produced and the relative distance of fields from the centers of consumption. Vapor pressure is the dominating factor in the Union's new schedule, the prices being graduated downward from 4.3 cents per gallon for natural gasoline of 14.1 to 16 pounds pressure to 1.8 cents per gallon for natural gasoline showing a vapor pressure between 52.1 and 54 pounds.

Minor variations exist between fields in the same section of the State due to fundamental differences in the component fractions of the gasoline. Experience with high octane motor fuel indicates that the proper use of natural gasoline running between 16 and 20 pounds vapor pressure brings best results. It is quite obvious that the graduated price scale should tend to improve the quality of natural gasoline produced and may lead to the installation of improved equipment in order to bring the price received up into the higher brackets. Following are the prices posted:

UNION OIL CO. OF CALIFORNIA
NATURAL GASOLINE PRICES FOR ITS CURRENT PURCHASES IN THE FIELD
EFFECTIVE 7 A.M., MAY 1, 1933
(Prices in cents per gallon in fields indicated)

Reid V. P.—	Richfield	Huntington Beach	Brea	Santa Fe Springs	Long Beach	Dominguez	Rosecrans	Playa del Rey	Santa Paula	Orcutt	San Joaquin Valley	Kettleman Hills
14.1-16.0	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	3.8	3.8	3.8
16.1-18.0	4.1	4.1	4.1	4.0	4.1	4.1	4.1	4.1	4.1	3.6	3.6	3.6
18.1-20.0	3.9	3.9	3.9	3.9	3.9	3.9	3.9	3.9	4.0	3.4	3.4	3.4
20.1-22.0	3.9	3.7	3.8	3.8	3.7	3.8	3.9	3.7	4.0	3.4	3.3	3.2
22.1-24.0	3.8	3.6	3.7	3.7	3.6	3.7	3.9	3.6	4.0	3.3	3.2	3.0
24.1-26.0	3.8	3.6	3.7	3.7	3.6	3.7	3.8	3.4	4.0	3.3	3.1	2.9
26.1-28.0	3.8	3.5	3.6	3.7	3.5	3.6	3.8	3.4	4.0	3.2	3.1	2.8
28.1-30.0	3.7	3.4	3.6	3.7	3.4	3.6	3.8	3.3	4.0	3.2	3.0	2.8
30.1-32.0	3.7	3.4	3.6	3.7	3.4	3.6	3.8	..	3.9	3.1	3.9	..
32.1-34.0	3.6	..	3.5	3.6	..	3.5	3.8	..	3.9	3.1	..	..
34.1-36.0	3.6	..	3.5	3.6	..	3.5	3.7	..	3.9	3.0	..	..
36.1-38.0	3.5	..	3.4	3.6	..	3.4	3.6	..	3.8	3.0	..	..
38.1-40.0	3.4	..	3.4	3.5	..	3.4	3.6	..	3.7	2.9	..	..
40.1-42.0	3.3	..	3.3	3.5	..	3.3	3.5	..	..	2.8	..	..
42.1-44.0	3.2	..	3.3	3.4	..	3.3	3.3	..	..	2.6	..	..
44.1-46.0	3.1	..	3.1	3.3	..	3.2	3.3	..	..	2.5	..	..
46.1-48.0	2.9	..	3.0	3.2	..	3.1	3.1	..	..	2.3	..	..
48.1-50.0	2.8	..	2.9	3.2	..	3.0	3.0	..	..	2.2	..	..
50.1-52.0	2.7	..	2.8	3.1	..	2.9	2.9	..	..	2.0	..	..
52.1-54.0	2.6	..	2.7	3.0	..	2.8	2.7	..	..	1.8	..	..

Six More Permits Asked to Strip Panhandle Gas

AMARILLO, Tex., May 15.—The Texas Railroad Commission will consider the application of six more companies here May 22 in which they ask permission to process gas through natural gasoline plants located in the Texas Panhandle without utilizing the residue for light or fuel. The commission's order for the appearance of the applicants follow: Notice be and the same is hereby given to Derby Oil Co., Dyck Oil Co., Gulf Production Co., Lela Oil & Gas Co., Mert Oil Co., Operators Royalty & Producing Co., and to all interested parties, including the public generally, that at 10 o'clock a.m., on Monday, May 22, 1933, at Herring Hotel in the city of Amarillo, Tex., the commission will take up and consider the application of the above named parties for permits to extract gasoline from their wells in the Panhandle district, and where practical, to make beneficial use of the residue.

"Pursuant to this hearing and evidence and argument there presented, the Railroad Commission of Texas will take such action upon said applications as may appear just and reasonable and authorized by law."

CANADIAN PLANT OPERATING

CHATHAM, Ontario, May 13.—The new gasoline absorption plant of the Royalite Oil Co., built as an addition to its scrubbing plant in the Turner Valley Field, was put into operation early in May. Approximately 35,000,000 feet of "tail" gas is being put through the plant daily. This gas, left after the crude naphtha had been recovered by separators, was previously allowed to burn as waste. Owing to the necessity of making adjustments in the early stages, no estimate has yet been given as to the amount of natural gasoline recovered, except that it was considerable, and that the plant appeared to be working satisfactorily.

THREE DIRECTORS NAMED

The Natural Gasoline Supply Men's Association elected three new directors at its meeting Monday as part of the general meeting called to complete plans for the entertainment of those attending the gasoline association's convention in Tulsa this week along with other matters.

The directors elected were Paul Raigorodsky of Petroleum Engineering, Inc., B. W. Vinson of the B. W. Vinson Co. and G. B. Lane of the Foxboro Co. The retiring directors included G. M. Brigham of the North American Car Corp., A. V. B. Candler of the National Supply Co. and W. D. Moorer of the Moorlane Co.

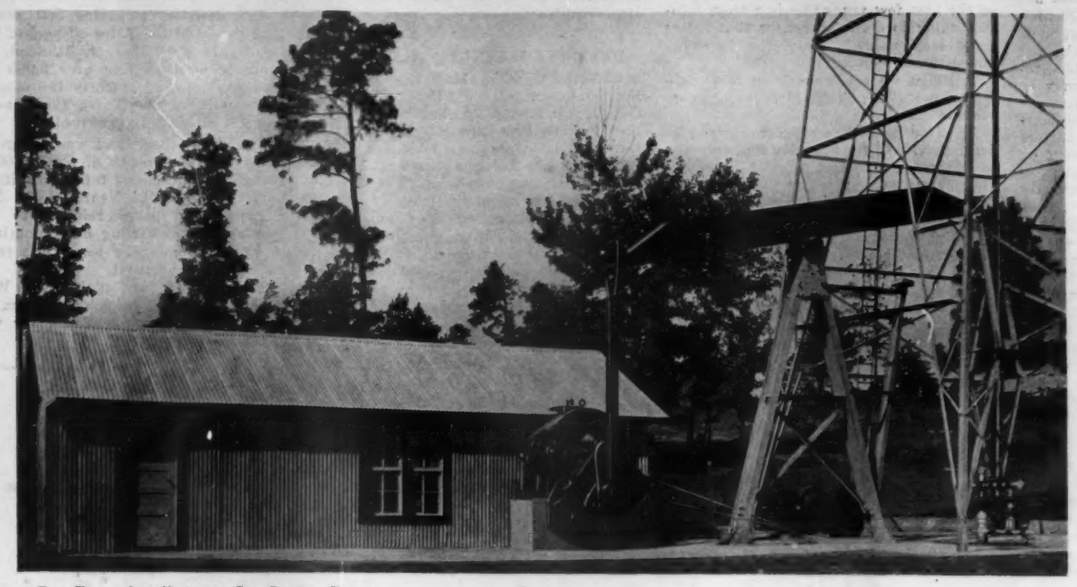
PERMIT TO OPERATE PLANT

FORT WORTH, Tex., May 15.—The Texas Elf Carbon Co. has filed an application with the Texas Railroad Commission for the renewal of a permit to manufacture carbon black, from gas produced in the Panhandle. The hearing on the application has been set for May 22 in Amarillo. The plant for which the application has been filed is located in the Bowers Pool in Gray County.

CANADIAN IMPORTS

Natural casinghead gasoline imported into Canada in February declined to 868,600 gallons worth $40,353 from the preceding month's total of 1,104,155 gallons at $56,417. Importations of gasoline lighter than .8235 specific gravity at 60° temperature were recorded at 1,053,947 gallons valued at $79,063; in January, 1,247,078 gallons at $107,703 were imported.

IDECO GEARED PUMPING UNITS IDECO



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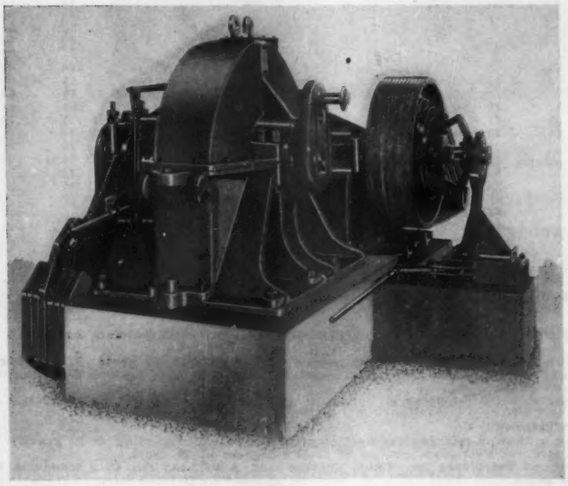
Standardize your wells with IDECO PUMPING EQUIPMENT.
Enjoy the economies of continuous and trouble-free operation.
Experience the satisfaction of knowing that you have chosen wisely.



Be Prepared!

....when the rock pressure fails...
....when flush production stops.

Now is the time to study your pumping requirements . . . . Now is the time to select your pumping equipment!

Whatever the type of pumping rig preferred . . . . Whatever the type of prime mover used . . . . Whatever the nature of your pumping problems . . . . IDECO has a unit especially adaptable to your particular requirements.

Outstanding among pumping rigs are the IDECO No. 60 and No. 67 Geared Units. These units are designed not only for extra heavy service at individual wells, but also for use as a central power in multi-well pumping.

These units are recommended for your immediate and earnest consideration.

Other IDECO Products:

BOYKIN (GREYHOUND) ROTARIES, DRAW-WORKS, TRAVELING BLOCKS, CROWN BLOCKS, TUBING HOISTS.

IDECO SWIVELS, STANDARD RIGS, ROTARY COUNTERBALANCES, PITMEN, FLOAT SHOES, DERRICKS, WHEELS, ETC.

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COLUMBUS, OHIO — BEAUMONT, TEXAS — LOS ANGELES, CALIF.

Branches in Every Important Oil Field
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Chicago Area Adjusting Itself to New Conditions

(Continued from Page 31)

cents, and the 68-70 375 endpoint gasoline shows a decline of an eighth of a cent to a range of 2⅛ to 2¾ cents. Aviation gasoline is unchanged at 3 to 3¼ cents, with competition keen at these prices.

Special Naphthas Weaker

Special naphtha tank car markets are showing the effects of the gallonage urge which has come to a number of new sources. Price shading is general, and with the exception of paint materials, including lacquers, further declines may be expected. Monday's tank car prices on naphthas showed rubber solvent the heaviest loser with a drop of three-quarters of a cent on the low, and half a cent on the high ends of the range. Natural gasoline competition is said to account for this easing in prices outside of Akron district. Stoddard solvent moved down a quarter of a cent to a range of 4⅛ to 4¾ cents. V.M.&P. naphtha has not shared the improvement noted in the petroleum thinner prices, Paint thinner advanced a quarter of a cent to a range of 4¼ to 4½ cents, while the range in V.M.&P. appears to have been cut down to a low price of 5 cents, last week's low. The heavy petroleum spirits is unchanged at 3⅞ to 4 cents. It is reported that these prices are none too stable and liable to further cuts this week.

Kerosene Tank Car Markets

Adverse weather conditions and somewhat freer offerings of kerosene have tended to weaken the strong position which has characterized this product in the open markets. In the tank wagon markets the kerosene prices have been stabilized at a point one-half cent under the regular grade gasoline posting (exclusive of tax) throughout the territory. The 41-43 water white kerosene declines an eighth of a cent to a range of 2½ to 2¾ cents, and the 42-44 water white material moved down to a range of 2⅝ to 2⅞ cents.

Fuel Oils and Distillates

Distillates share the weakness in the kerosene markets. The 38-40 prime white material is offered at an eighth of a cent less in a range of 1¾ to 2 cents; the 38-40 straw distillate is likewise lower at 1¾ to 1⅞ cents, and the 32-36 straw distillate is quoted at 1⅝ to 1⅞ cents. Slackening in demand and adverse developments in the contract setup have borne more heavily on the fuel oils. Declines range from 2½ to 5 cents a barrel on the fuel oils. The U.G.I. gas oil fell off an eighth of a cent to a range of seven-eighths to 1 cent. Monday's fuel oil prices were: 28-30 zero, 65 to 70 cents; 26-28 zero, 55 to 60 cents; 22-20 zero, 45 to 50 cents; 18-22 zero, 37½ to 42½ cents; below 18, 27½ to 37½ cents. Petroleum coke prices are unchanged.

Refined Wax to Advance

With demand on the increase and government figures showing another 11,000,000-pound drop in refined wax stocks in the country, bringing the total to 137,000,000 pounds, refined wax markets in the territory were strong and an advance of 10 to 20 points expected this week.

Natural Gasoline Committee Considering New Problems

(Continued from Page 36)

able at that time for eliminating the discrepancies sometimes observed.

In February the committee completed a leaflet on "Precautions in Reid Vapor Pressure Testing," which appeared in the trade journals shortly thereafter. Copies of this leaflet are available through the association offices.

At the last meeting of the committee it was decided to more thoroughly investigate the effect of air solubility on Reid vapor determinations with the object of modifying the present procedure to overcome this slight defect and with the further object of improving the accuracy of the method to the point where it could be more widely applied to motor fuels. A plan of attack has been outlined and this work is well started.

During the year, the regular monthly meetings of the technical committee initiated last year, were continued. Although attendance was not the best it is believed such meetings should be encouraged for the benefits obtained from exchanges of ideas.

It is customary at this time to make suggestions for the future activities of the technical committee. After the repressions of the past few years this is a most difficult thing to do. In the hope that better days are coming I have the following suggestions to make:

1. That we really work on this problem of perfecting the Reid vapor pressure method.

2. That we devote some energy to giving publicity to the superior lead response of natural gasoline.

3. That we determine whether natural gasoline deposits less carbon in the automobile engine and gum in the valves than the highly cracked gasolines now prevalent.

4. That we study the possibility of improving the antiknock characteristics of our product by more thorough removal of heavy ends.

5. That some consideration be given to the suggestion of having the technical committee abstract current literature for the benefit of the membership of the association.

6. That the desirability of standardization of sampling and composition analysis be studied.

In conclusion, permit me to call attention to the fact that with the curtailed research program of the association, committee work assumes a new importance. If the association is to move forward it must now do so through the agency of its committees.

BUCKEYE-ILLINOIS TRANSFER

FINDLAY, Ohio, May 15.—The pipe line equipment of the Illinois Pipe Line Co., of Findlay, Ohio, has been sold to the Buckeye Pipe Line Co., of Lima, in six counties in northern Ohio, for $175,000, the sale being authorized by the State Utilities Commission. The Illinois Pipe Line Co. asked authority to sell all of its crude oil gathering system in the Wooster Field. The application, signed by both companies, stated that the transaction would greatly increase the market for Wooster crude and nearby producing areas' output. The lines are in Ashland, Medina, Coshocton, Wayne, Holmes and Summitt Counties.

Pecos County Decision by Texas Supreme Court

AUSTIN, Tex., May 15.—The Supreme Court of Texas Saturday decided the Pecos County oil suits. Subject to motions for rehearing and final decrees, the decision freed more than $50,000,000 to the Texas public school fund and Texas citizens, impounded in oil company treasuries awaiting final judgment.

The decision, awarding 360 acres of land partly in the Yates oil pool of Pecos County to Fred Turner, Midland, fixes property ownership in over 9,000 acres of land, including much of the most valuable part of the Yates Pool and the value of oil already produced.

The state school fund was declared entitled to one-sixteenth of $25,000,000 already impounded and future royalties on part of the land. Nearly 1,000 Texas citizens have money released to them, long due but awaiting determination as to which oil company lessee was responsible for its payment.

The decision held against the Whiteside heirs. It sustained the claim to a small tract of Ira G. Yates, for whom the oil field is named.

California Crude Oil Prices

STANDARD OIL CO. OF CALIFORNIA
(Effective March 5, 1933)

For current purchases of crude oil at the well (unless otherwise specified). (All gravities above those quoted take highest price offered in that field.)

Gravity—	Long Beach	Seal Beach, Alamitos Heights	Huntington Beach	Inglewood	Playa del Rey	Olinda, Brea Canyon	Athens-Rosecrans	Torrance	Richfield	Whittier	Montebello	LaHabra, Coyote	Santa Fe Springs	Midway-Sunset, Elk Hills, Buena Vista Hills	Lost Hills	Coalinga
14-14.9	$.55	$.55	$.55	$.55	$.55	$.55	....	$.55	$.55	$.55	$.55	$.55	....	$.49	$.49	$.49
15-15.9	.55	.55	.55	.55	.55	.55	....	.55	.55	.55	.55	.55	....	.49	.49	.49
16-16.9	.55	.55	.55	.55	.55	.55	....	.55	.55	.55	.55	.55	....	.49	.49	.49
17-17.9	.55	.55	.55	.55	.55	.55	....	.57	.56	.57	.55	.55	....	.49	.50	.49
18-18.9	.57	.55	.61	.61	.60	.61	....	.59	.58	.59	.55	.57	....	.49	.52	.49
19-19.9	.59	.57	.63	.64	.62	.64	....	.61	.61	.61	.55	.59	....	.49	.54	.49
20-20.9	.61	.59	.64	.67	.64	.66	....	.63	.63	.63	.55	.61	....	.53	.56	.49
21-21.9	.63	.62	.66	.69	.66	.68	....	.64	.66	.65	.55	.63	$.57	.55	.58	.51
22-22.9	.65	.64	.68	.71	.69	.70	....	.66	.68	.67	.57	.65	.59	.57	.60	.53
23-23.9	.67	.67	.70	.73	.71	.72	....	.68	.70	.69	.60	.67	.62	.60	.62	.55
24-24.9	.69	.69	.72	.75	.73	.73	$.65	.70	.73	.71	.62	.69	.64	.62	.63	.57
25-25.9	.71	.73	.74	....	.75	.75	.68	.73	.75	....	.65	.71	.66	.64	.65	.59
26-26.9	.73	.74	.76	....	.77	.77	.70	.75	.77	....	.68	.73	.69	.66	.67	....
27-27.9	.75	.76	.77	....	....	....	.70	.78	....	.80	....	....	.74	.71	.71	.69	....
28-28.9	.77	.79	.79	....	....	....	.81	.75	....	.83	....	....	.76	.73	.74	.71	....
29-29.9	.79	.81	.81	....	....	....	....	.78	....	.84	....	....	.78	.76	.76	.73	....
30-30.9	.81	.84	.83	....	....	....	....	.81	....	....	....	....	.80	.78	.79	.75	....
31-31.9	....	....	....	....	....	....	....	.83	....	....	....	....	.82	.80	.82	....	....
32-32.9	....	....	....	....	....	....	....	.86	....	....	....	....	.84	.83	.85	....	....
33-33.9	....	....	....	....	....	....	....	.86	....	....	....	....	.86	.85	.87	....	....
34-34.9	....	....	....	....	....	....	....	.86	....	....	....	....	.88	.87	....	....	....
35-35.9	....	....	....	....	....	....	....	.86	....	....	....	....	....	.90	....	....	....
36-36.9	....	....	....	....	....	....	....	....	....	....	....	....	....	.92	....	....	....
37-37.9	....	....	....	....	....	....	....	....	....	....	....	....	....	.94	....	....	....
38-38.9	....	....	....	....	....	....	....	....	....	....	....	....	....	.96	....	....	....
39 and over	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....

Signal Hill—Met on same day by The Texas Company, Union Oil Co. and General Petroleum Co., and Associated Oil Co.

Huntington Beach—The Texas Company, Union Oil Co., General Petroleum Co. and Associated Oil Co. schedules stop at 26-26.9 degrees, 75 cents.

Seal Beach, Alamitos Heights—The Texas Company met all prices; Union Oil Co., General Petroleum Co. and Associated Oil Co. schedules stop at 26-26.9 degrees, 75 cents.

Athens, Rosecrans, Domingues—Union Oil Co. schedule stops at 25-25.9 degrees, posting 22-22.9 degrees, 35 cents; 23-23.9 degrees, 37 cents; 24-24.9 degrees, 39 cents; 25-25.9 degrees, 90 cents. Associated Oil Co. met Standard Oil Co. schedule; General Petroleum Co. met Standard Oil Co. prices, stopping at 22-22.9 degrees at 35 cents.

Torrance—Met by The Texas Company. Met by Associated Oil Co, General Petroleum Co. and Union Oil Co., up to 25-25.9 degrees, at 75 cents.

Inglewood—Met by Associated Oil Co. and General Petroleum Co.

Playa Del Rey—(Prices subject to 5 cents per barrel gathering charge. Met by Union Oil Co. schedule starting at 19 gravity.

Olinda-Brea Canyon—Met by Union Oil Co. Met by General Petroleum Co., up to 25-25.9 degrees at 75 cents.

Santa Fe Springs—Met by The Texas Company, General Petroleum Co., Union Oil Co. and Associated Oil Co.; schedules start at 24-24.9 degrees, 64 cents, and end at 35-35.9 degrees, 90 cents.

East Coyote—Effective March 5, Union Oil Co.: 14 to 16.9 degrees, 55 cents; 17-17.9 degrees, 57 cents, with 2 cents added for each degree upward to 24.24.9 degrees, at 71 cents.

Richfield—Met by The Texas Company; met by Union Oil Co. up to 25-25.9 degrees, at 75 cents.

Montebello—Met by Union Oil Co. up to 25-25.9 degrees, at 65 cents.

Kern River, Mount Poso, McKittrick, Sunset, Midway, Elk Hills, Buena Vista Hills—Effective March 5, Union Oil Co.: 11-13.9 degrees, 44 cents; 14 to 19.9 degrees, 49 cents; 20-20.9 degrees, 52 cents; 21-21.9 degrees, 55 cents; 22-22.9 degrees, 57 cents; 23-23.9 degrees, 60 cents; 24-24.9 degrees, 63 cents; 25-25.9 degrees, 66 cents; 26-26.9 degrees, 68 cents; 27-27.9 degrees, 71 cents; 28-28.9 degrees, 74 cents; 29-29.9 degrees, 76 cents; 30-30.9 degrees, 79 cents. Associated Oil Co. scheduled in Midway, Elk Hills and Buena Vista Hills starts at 11 to 13.9 degrees, 44 cents; same as Union Oil Co. schedule from 14 to 29.9 degrees; 30-30.9 degrees, 79 cents. General Petroleum Co.: Effective March 5 in Midway-Sunset same as Associated Oil Co.; Fruitvale, Kern Front, Kern River, Mount Poso and Round Mountain, 49 cents for all grades.

Montebello—Met by Union Oil Co. up to 25-25.9 degrees, at 65 cents; The Texas Company's schedule in Montebello and North Whittier, 14 to 21.9 degrees, 55 cents; 22-23.9 degrees, 57 cents; 23-25.9 degrees, 60 cents; 24-24.9 degrees, 62 cents; 25-25.9 degrees, 65 cents; 26-26.9 degrees, 68 cents.

Santa Paula—Union Oil Co., March 5, 14 to 19.9 degrees, 55 cents; 20-20.9 degrees, 56 cents, with 1 cent added for each degree upward to 25-25.9 degrees, at 61 cents, and then 2 cents added for each degree upward to 30-30.9 degrees, at 71 cents. The Texas Company posts similar schedule in Santa Paula and Shiells Canyon.

Lost Hills-Belridge—Met by Associated Oil Co. and Union Oil Co., with Union Oil Co. paying 44 cents for 11 to 13.9 degrees gravity.

Coalinga—Met by Union Oil Co. and Associated Oil Co. on March 6 and General Petroleum Co. on March 15, but latter company and Associated Oil Co. posted 44 cents for 11 to 13.9 degrees effective March 5.

Ventura Avenue—Associated Oil Co., March 5, 28-32.9 degrees, 58 cents, with 2 cents added for each degree up to and including 36-36.9 degrees at 74 cents. Effective March 15, General Petroleum Corp.

Orcutt—Union Oil Co., effective March 5: From 16 to 19.9 degrees, 49 cents; 20-20.9 degrees, 52 cents; 21-21.9 degrees, 55 cents; 22-22.9 degrees, 57 cents; 23-23.9 degrees, 60 cents; 24-24.9 degrees, 63 cents; 25-25.9 degrees, 66 cents; 26-26.9 degrees, 68 cents.

Kettleman Hills—Effective March 5, Standard Oil Co., Union Oil Co. and Associated Oil Co.: 33 to 33.9 degrees, 66 cents, with 2 cents added for each degree upward to 39-39.9 degrees at 78 cents. Effective March 15, General Petroleum Corp.

Elwood—Prices f.o.b. ship—Standard Oil Co. of California, effective March 5: 32-32.9 degrees, 82 cents; 34-34.9, 85 cents; 35-35.9 degrees, 87 cents; 36-36.9 degrees, 89 cents; 37-37.9 degrees, 91 cents. Met by Union Oil Co.

Newhall, McKittrick and Kern River—Standard Oil Co. of California, 55 cents for all grades, effective March 5.

Wheeler Ridge—Standard Oil Co. of California, effective March 5: 14 to 20.9 degrees, 49 cents; 21-21.9 degrees, 50 cents; 22-22.9 degrees, 53 cents; 23-23.9 degrees, 54 cents; 24-24.9 degrees, 56 cents; 25-25.9 degrees, 58 cents.

Rincon—General Petroleum Corp., effective March 15: 32-32.9 degrees, 84 cents; 2 cents added for each degree upward to 39-39.9, at 70 cents.

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Ector County Is Most Interesting in West Texas; Expect Fourth Producer in Crockett County

By L. E. BREDBERG
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., May 15.—The discovery well of the Big Lake Field, Reagan County, will be 10 years old on May 28. This discovery inaugurated the greatest era of expansion West Texas has ever known, and brought all major as well as hundreds of smaller companies and independent operators to the Permian Basin. It resulted in exploration work which brought many other discoveries to the district, chief of which were the Church and Field, McElroy, McCamey, Winkler County, Yates and Howard-Glasscock Pools. The discovery also started a royalty fund that has made the University of Texas one of the wealthiest schools in the nation.

There are now two main pay horizons found in the field. One is just below 3,000 feet and the Ordovician horizon is found below 8,000 feet. Fifteen high gravity oil producing wells have been completed in the latter, this pay having been barely pricked since the completion of the first deep well in the field.

The city of San Angelo, which benefited greatly from the discovery, will celebrate the anniversary by holding a two-day "birthday" party, and all men and their families who were connected with the petroleum development of West Texas, past and present, have been issued a blanket invitation to attend.

Ector County

Stanolind Oil & Gas Co.'s No. 1 Cowden, Section 26, Block 43, Township 2s, T.&P. Survey, Ector County, remains the most interesting well in the basin at the present time, although it is still showing for only a small well. It was treated with 1,500 gallons of acid from 3,816-4,042 feet last week. Pumping equipment is being installed and estimates are that it will make around 100 bbls. per day, a small and profitless well at this depth and at the low price the sulphur contaminated oil brings in this district.

Landreth and The Texas Company's No. 1 Holt in Section 16, Block 43, Township 1n, T.&P. Survey, approximately 18 miles north of the above mentioned well, will be the next well to be drilled in Ector County. It is in the Cowden area, in which Stanolind Oil & Gas Co. has had two wells producing for a couple of years, and in which Landreth recently completed a small producer. This fourth well for the area is drilling at 3,994 feet in lime, top of which has not yet been determined.

Proration Hearings

The hearings on Howard-Glasscock and Big Lakes Fields have both been postponed by the Railroad Commission. Hearing on the former field, scheduled for June 3, will be held at Big Springs on June 9. Hearing on the latter field, scheduled at San Angelo for June 2, will be held there on June 8.

Crockett County

Continental Oil Co. is planning to treat its No. 1 J. S. Todd in Section 25, in the Todd shallow pool, Crocket County, with acid in an effort to make a producer after failing to do so by shooting. The test went through an oil saturated streak of lime at 1,563-65 feet, drilling to 1,693 feet before plugging back to 1,570 for a shot. A shot of 10 quarts was placed from 1,560-70 feet, with no results, the test bailing only 4 bailers of oil in 14 hours.

This is a possible fourth producer for the shallow area, two other small oil producers and a gas producer being drilled in in time to validate several thousand acres of leases held by Continental Oil Co., and a unitized group for which Stanolind Gas Co. has been operating, and for which it drilled an Ordovician failure in this area.

Superior Oil Co. of California is drilling a shallow test on the R. Massie ranch in Section 14, Block UV, G.C.&S.F. Survey, to validate leases on block held in the area, and is expected to drill also an Ordovician test later.

Pecos County

Eppenauer Drilling Co. is rigging up for an interesting test in Pecos County, on the White and Baker ranch, between Humble Oil and Refining Co.'s Ordovician test now drilling, in Section 44, Block Z, and the Yates Field. Location of the new test will be in Section 10 of the same block. It will be drilled to the Permian lime.

Reagan County

The wildcat of Wahlenmaier Petroleum Corp. and others on the D. E. Hughes ranch, Section 23, Block F, C.&M. Railway Survey, near Stiles in Reagan County, topped the lime during the week at 2,695 feet and is now fishing for tools at 2,710 feet.

RANGER AND WICHITA FALLS

The daily average production for the week in Ranger and Wichita Falls areas was 50,608 barrels or an 1,883-barrel drop from the previous week's figures. Locations dropped during the week.

Oil storage reports for North Central Texas showed total stocks to be 8,161,122 barrels as of May 1. This is a decrease of 315,550 barrels from the April 1 report. Another decline will no doubt be registered during May due to the drop in production.

PANHANDLE DISTRICT

Only 4 producers were completed in the district. The total initial output was only 1,061 barrels of oil and 6,000,000 feet of gas. Two were completed on pump, one making only 7 barrels. One gasser, in Wheeler County, was completed for only 1,000,000 feet of gas. The other producers were all in Gray County.

Woolsey and Devore's No. 1 Belew, Section 85, Block 2, A.B.&M. Survey, Randall County, has an 86-foot derrick on location and is ready to spud. This is to be a 4,500 foot test, and is on a 20,000 acre block in wildcat territory.

COMPLETIONS IN NORTH TEXAS DISTRICT

Archer County

Fain and McGaha Oil Corp.'s No. 4 E. R. Bain, show oil at 1,802-11 feet, initial production 15 bbls. of oil and 24 bbls. of salt water; total depth 1,811 feet. Charles L. Abercrombie's No. 2 Abercrombie, sandy lime, 1,139-51 feet, initial production 11 bbls., total depth 1,151 feet. G. G. Browning's No. 1 Andrews, dry and abandoned, total depth 975 feet. Magee and Stipe's No. 1 Portwood, dry and abandoned, total depth 1,417 feet. R. C. Parker's No. 1 Breyena, oil sand 1,432½-42½ feet, initial production 9 bbls., total depth 1,445 feet.

Clay County

Developers Oil and Gas Co.'s No. 18-A Fee, dry and abandoned, total depth 1,783 feet.

Jack County

A. C. Parks' No. 1 John Miller, dry and abandoned, total depth 701 feet. Root Drilling Co.'s No. 3 Coleman-Leach, dry and abandoned, total depth 608 feet.

Throckmorton County

A. V. Jones' No. 1 W. B. Parrott, dry and abandoned, total depth 1,387 feet.

Wichita County

G. W. Cooper's No. 24 Waggoner Bros., oil sand 1,328-36 feet, initial production 40 bbls., total depth 1,336 feet. Kimbell and Bostic's No. 3-A Hines, oil sand 290-5 feet, initial production 5 bbls., total depth 295 feet. Magnolia Petroleum Co.'s No. 6 S. E. Honaker, junked, total depth 1,714 feet. Morris and Dunn's No. 8 Shelton, dry and abandoned, total depth 900 feet. Texas Co.'s No. 415 Waggoner, dry and abandoned, total depth 1,203 feet; No. 416 Waggoner, dry and abandoned, total depth 1,205 feet.

Wilbarger County

Schlaffke and Blair's No. 1 A. Smith, dry and abandoned, total depth 1,206 feet. Texas Co.'s No. 414 Waggoner, dry and abandoned, total depth 1,202 feet.

Young County

Art Floyd Jr.'s No. 1 Belknap, dry and abandoned, total depth 717 feet. Bonner Co.'s No. 12 Edwards, shot from 460-500 feet, initial production 3 bbls., total depth 500 feet. J. C. Cory's No. 1 Terrell, dry and abandoned, total depth 598 feet. M. A. Hays' No. 1 Kinkel, dry and abandoned, at total depth of 1,070 feet. Charles J. Kleiner's No. 2 Belknap, dry and abandoned, total depth 710 feet. Leberman and Tebay's No. 1 Keathley, dry and abandoned, total depth 1,050 feet. Texas Co.'s No. 1 Burns, shot 180 quarts 4,130 feet, initial production 125 bbls., total depth 5,192 feet. Wooten and Reed's No. 5 Henson, dry and abandoned, total depth 900 feet. D. M. Know and others' No. 2 Brashear, oil sand 2,717-47 feet, initial production 250 bbls., total depth 2,747 feet. T. G. Shaw's No. 1 Farmer, oil sand 3,432-38 feet, initial production 26 bbls., total depth 3,512 feet.

COMPLETIONS IN RANGER DISTRICT

Callahan County

A. C. Gentry's No. 1 A. R. Kelton, dry and abandoned, total depth 723 feet. Hayek Oil Co.'s No. 1-10 Finley, total depth 478 feet, plugged back to 340 feet, initial production 250,000 feet of gas. Henry House's No. 5 Finley, show gas 427-29 feet, initial production 500,000 feet of gas, total depth 429 feet. Putman Oil Co.'s No. 9 Wadsworth, show gas 414-19 feet, initial production 1,000,000 feet of gas, total depth 419 feet. Sample's No. 13 Finley, gas sand 332-45 feet, initial production 500,000 feet of gas, total depth 345 feet. Spenser's No. 1 R. D. Williams, show of oil and gas 586-87 feet, initial production 2 bbls., total depth 587 feet.

Denton County

Freeman Brothers' No. 1 Fee, temporarily abandoned, total depth 3,507 feet.

(Continued on Page 48)

Wildcat Operations in West Texas

Week Ending May 13

BREWSTER COUNTY

Company, well, farm name, section and block—	Remarks:
Joiner's No. 1 McIntire, 953 ft. from S and 2,390 ft. from E, Sec. 31, Blk. 352, W. J. Mitchell Sur.	Underreaming csg. 800 ft.

CONCHO COUNTY

Beasley et al's No. 1 Waring Estate, 400 ft. from N and E Sec. 183, T.&N.O. Sur.	T.D. 2,586 ft.; pumping 5 bbls. oil per day and some water.

CRANE COUNTY

Loffland Bros.' No. 1 Tubbs, 1,334 ft. from N line and 1,320 ft. from W line of Sec. 9, Blk. B-27, P.S.L. Sur.	Moving in material.

CROCKETT COUNTY

Stanolind Oil & Gas Co. et al's No. 1 Todd, 1,370 ft. from N and 1,320 ft. from E, Sec. 67, Blk. UV, G.C.&S.F. Sur.	Plugged back to 6,486 ft.; will probably abandon.
Superior Oil Co.'s No. 1 R. Massie, 2,640 ft. W of NW cor. of Sec. 14, G.C.&S.F. Sur., Blk UV, and located in Sec. 16	Drlg. 1,306 ft.

CULBERSON COUNTY

Miller Bros.' No. 1 fee, 1,980 ft. from N line and 660 ft. from E line of Sec. 61, Blk. 97, P.S.L. Sur.	T.D. 530 ft.

DAWSON COUNTY

Ray Albaugh et al's No. 1 John Robinson, 1,320 ft. from N and W, Sec. 46, Blk. M, E.L.R.R. Sur.	S.D. 920 ft.

ECTOR COUNTY

Cherry et al's No. 1 Johnson, 1,320 ft. from S line and 660 ft. from E line of Sec. 41, Blk. 43, Twp. 1s, T.&P. Sur.	Drlg. 2,725 ft.
L. C. Harrison et al's No. 1 Addis, 330 ft. from N and 1,320 ft. from W, Sec. 35, Blk. 43, Twp. 2s, T.&P. Sur.	Flowing average of 275 bbls. oil per day to tanks; T.D. 4,061 ft.
Landreth Prod. and The Texas Company's No. 1 Holt, 660 ft. from S line and 2,025 ft. from E line of Sec. 16, Blk. 43, Twp. 1s, T.&P. Sur.	Drlg., 3,750 ft.
Stanolind O. & G. Co.'s No. 1 Cowden, 330 ft. from S and 1,320 ft. from W, Sec. 26, Blk. 43, Twp. 2s, T.&P. Sur.	T.D. 4,042 ft.; T.P. 3,816 ft.; swabbed and flowed 160 bbls. of oil 16 24 hrs.
Thomas et al's No. 1 Edwards, 330 ft. from S, 2,310 ft. from E, Sec. 38, Blk. 43, Twp. 2s, T.&P. Sur.	Set casing at 6,937 ft.
Fred Turner's No. 1-A Addis, 1,650 ft. from N line and 2,300 ft. from E line of Sec. 35, Blk. 45, Twp. 2s, T.&P. Sur.	Drlg. 1,420 ft.

FISHER COUNTY

Cranfill & Reynolds' No. 2 George, 330 ft. from N and W lines of NE of Sec. 200, Blk. 1, B.B.B.&C. Sur.	Fishing 2,090 ft.
Southern Oil Co.'s No. 1 Beavers, 330 ft. from W and 660 ft. from S of S half of SW Sec. 193, B.B.B.&C. Sur.	Drlg. 1,800 ft.

GLASSCOCK COUNTY

Humble Oil & Refining Co.'s No. 1 Washer, 330 ft. from N line and 330 ft. from E line of Section 29, Blk. 33, Twp. 2s, T.&P. Sur.	Drlg. 1,645 ft.

(Continued on Page 47)

Demand for East Texas Oil Reported Increasing; Efforts Made to Enforce Production Rule

By L. E. BREDBERG

DALLAS, Tex., May 15.— The market for East Texas oil has been steadily increasing. All purchasing companies, with the exception of the Atlantic Oil Purchasing Co., are taking the entire allowable. That company is taking only 60 per cent. Humble Oil & Refining Co. has heretofore been taking only 75 per cent, storing the other 25 per cent for the producer and royalty owners, and charging 2 cents per barrel per month for storing it, but on May 13 it announced it would purchase the "net quantity of all crude oil in storage with Humble Pipe Line Co. as of 7 a. m., this date, for the account of the respective producers and royalty holders at the posted field price of Humble Oil & Refining Co. as of 7 a. m., this date, for the respective oil involved. For all oil so purchased Humble Oil & Refining Co. will also pay per barrel gathering charge heretofore assessed by Humble Pipe Line Co. under its published tariffs."

"There are accrued storage charges against the crude oil in storage with the Humble Pipe Line Co. for your account. Humble Oil & Refining Co. will assume and pay one-half of all such charges in excess of the charges for one month's storage. All other charges must be borne by the party storing the oil and the amount of same will be deducted from the purchase price of any and all oil purchased hereunder. Naturally an offer of this kind cannot be held open indefinitely, and it is, therefore, made subject to acceptance on or before May 25, 1933, and subject to the right of Humble Oil & Refining Co. to withdraw the offer without notice."

Humble Oil & Refining Co. started taking only part of the oil and storing the remainder for the producer and royalty owners, September, 1932. During the past few months the amount purchased was 75 per cent of the daily allowable, the other 25 per cent going to storage. Prior to that time it was on a 60-40 basis.

Efforts for Enforcement

The Texas senate passed a house bill defining the penalties for violation, making the first offense as a misdemeanor punishable by fine of from $500 to $5,000 and from 30 days to a year in jail or both. The second is made a felony, punishable by two to four years imprisonment.

The attorney general's department has two attorneys in Longview filing injunctions against tax evaders and proration violators. They are working from 12 to 16 hours per day and have been turning in cases at the rate of about 40 per day during the past few days. Some suits ask that permits to do business in Texas be cancelled on account of violation of proration orders. Suit was also filed asking for appointment of a receiver at leases where excess amounts of oil allegedly had been produced and a receiver was appointed immediately to take charge of the leases.

Judges J. C. Hutcheson, James C. Wilson and Randolph Bryant will serve as a three-judge Federal court to hear the suits of Hunt Production Co. and of Rowan and Nichols of Fort Worth attacking the present proration order which were to have come up during the past week but were postponed until May 25.

Checking Refineries

The State Motor Fuel Tax Enforcement Department is taking an active hand in East Texas. It has a bureau set up at Longview with 38 men working the field under Sam Kimberlin. Most of its work is checking the refineries for gasoline tax evasion and it already has turned in some interesting figures. For instance: Six refineries paid taxes on 389,000 gallons of gasoline sold during February, before the bureau was set up at Longview. From March 15 to April 1, all gasoline truck loads were checked out from these six refineries, showing 894,969 gallons sold and taken from them. This check was made on only six of the 40 plants then operating.

The bureau has a constant, 24-hour patrol duty on the refineries in the field. It is also inspecting and checking all trucks, of which there are over 300 operating in and out of the field. Some of the trucks were found to have false bottoms or compartments carrying from 1 to 300 bbls. more than reported by the drivers. These trucks have been put out of service by the department.

A list is now being compiled of all trucks, listing the amount of gasoline each truck holds so that quicker and more efficient checking can be made as the trucks load at the plants. Highway patrolmen also check up the trucks along the highway, aiding the comptroller's force.

Chemical analyses of refined products are also being made in the field. One hundred and forty-four samples have already been taken from refineries, filling stations in the district and trucks transporting gasoline from the field. Twelve complaints have been filed for inferior motor fuel.

One refinery has had a misdemeanor complaint filed on it for tax evasion, and a felony suit has been filed against another for the same offense. One other plant was prevented from making sales of refined products in Texas because of tax evasion.

When the department first opened an office at Longview it had only four men working the field, a force far too small to check all refineries in the field. Gregg County has furnished part of the 38 men now working in the field for the department.

Vigilance Association

A "vigilance association" has also been organized in the field, the purpose of which is to maintain a corps of field and office men to aid the state in enforcing proration. Offices have been opened at Longview and volunteers will carry on the work of helping to check violators of the Commission's orders, and report violations to the Commission's men at Kilgore and the Attorney General's men at Longview.

One group of operators in the field is contemplating construction of a 12-inch pipe line from the field to a Gulf port, and New York capital was said to have been promised, but other lines of this nature have been rumored, planned, proposed and reported several times, and it is extremely doubtful such a plan will ever reach maturity.

Locations and Completions

There were 13 locations staked in the field during the week. One location for a shallow Nacatosh sand test was made in the Van area, Van Zandt County, and a wildcat location was staked by Smith and La Rue and others on the Calmorgan farm in the T. Massingill Survey in Angelina County.

There were 21 completions reported. Three wildcat tests were abandoned. These were in Franklin, Rusk and Van Zandt county, respectively.

Stumpff and others abandoned their No. 1 M. I. Riggs in the William Daniel Survey in the Van area, Van Zandt County. This was originally a Nacatosh sand test but was carried to 2,950 feet before being given up as a failure. Elevation is 455 feet. A drill stem test from 1,210-1,260 feet, in the Nacatosh horizon, tested only mud.

T. C. Castle's No. 1 Gray in the J. Latham Survey, 10 miles south of Henderson, Rusk County, was abandoned at 3,812 feet. Elevation is 469 feet. It topped the Pecan Cap chalk at 2,678-3,050 feet and the Austin chalk from 3,520-3,672 feet.

Tank car movements from the field, for the 24 hours ending at 7 a. m. May 15 were 785 cars. Part of these carried refined products. During the same period ending May 16, 1,040 cars left the field.

East Central Texas Wildcats

Week Ending May 15

ANGELINA COUNTY

Company, well, farm name, section and block—	Remarks:
Smith and LaRue et al's No. 1 Colmorgan, 150 ft. N of American Liberty Oil Co.'s No. 1 Colmorgan, T. Messingill Sur.	Coring 995 ft.

CHEROKEE COUNTY

Hooper et al's No. 1 Doctor Overton, 330 ft. from N and E lines of tract and 330 ft. out of most easterly NE cor. of survey, Wesley Dikes Sur.	S.D. 3,656 ft.
Wilson & Stubbs' No. 1 L. Robert, 450 ft. from S and 150 ft. from W line of lease, J. B. Wolfin Sur.	Prepare to deepen. T.D 4,000 ft

FREESTONE COUNTY

Clyde Creighton's No. 1 Holley Bros., 854 ft. from W line and center of N and S lines of lease, A.B.M. Sur	T.D. 4,507 ft.
Sun Oil Co.'s No. 1 M. White, 150 ft. from S and E lines of M. White 40-ac. tract, J. M. Hallmark Sur.	Drlg. 4,320 ft.

GREGG COUNTY

Bay Oil Corp.'s No. 6 J. M. Wheeler, 150 ft. due N of Pelphrey Bros.' No. 1 Wheeler, D. Ferguson Sur.	Derrick.
Cosby et al's No. 1 I.&G.N.R.R., 7,100 ft. from N line and 4,710 ft. from W line of survey, M. V. Winkle Sur.	Drlg. 2,975 ft.
Lewis Godlin et al's No. 1 Mrs. W. W. Owens, 789 ft. from N line and 181 ft. from W line of survey, D. Meredith Sur.	T.D. 3,661 ft.; cmtd. csg.
Gulf Production Co.'s No. 5 S. G. Andrews, 1,219 ft. W and 535 ft. S of NE cor. of league and survey, W. P. Chisum Sur.	Waiting on cmt. to set 3,567 ft.
Humble Oil & Refining Co.'s No. 11 J. F. Boles, 2,020 ft. from S line and 219 ft. from W line of survey, D. Ferguson Sur.	Derrick.
W. R. Jones' No. 3 R. P. Doby, 150 ft. from N line and 330 ft. from W line of lease, M. Irwin Sur.	Waiting on cmt. to set 3,742 ft.
J. S. King's No. 1 fee, 3,590 ft. from N line and 4,360 ft. from W line of survey, M. V. Winkle Sur.	Drlg. 1,020 ft.
Lion Oil & Refining Co.'s No. 2 Evans, S offset to Sinclair Prairie's No. 10 Williams, P. McAnnelly Sur.	Derrick.
C. H. Lyons' No. 1 W. Smith, 1,400 ft. from N line and 2,470 ft. from W line of survey, J. S. Carrithers Sur.	Waiting on cmt. to set 1,800 ft.
Ray Drilling Co.'s No. 2 Tubbs, 150 ft. from W line of lease in D. Sanches Sur.	Waiting on standard rig; will not flow; T.D. 3,535 ft.
P. H. Stanford's No. 1 North Chapel, 70 ft. from N line and 1,070 ft. from W line of survey, M. Tennison Sur.	Skidding 30 ft. SW.
Shell Petroleum Corp.'s No. 6 P. M. Bates, 356 ft. N of No. 4 and midway between E and W lines of lease, M. V. Winkle Sur.	Set surface csg.

(Continued on Page 46)

COMPLETIONS IN EAST TEXAS

North Gregg County

Barnsdall Oil Co.'s No. 10 Bingham, top sand 3,506 feet, initial production 30 bbls. in one-fourth hour through 2-inch tubing, total depth 3,561 feet. Bonds & Dillard's No. 5 D. Meyers, top sand 3,534 feet, initial production 165 bbls. per hour through open tubing, total depth 3,575 feet. Gulf Production Co.'s No. 36 J. C. Judge, top sand 3,519 feet, initial production 100 bbls. per hour through open tubing, total depth 3,549 feet. Ed Holdman's No. 1 Victor, top sand 3,634 feet, initial production 90 bbls. per hour through open tubing, total depth 3,650 feet. Magnolia Petroleum Co.'s No. 7 I. Zeigler, top sand 3,462 feet, initial production 110 bbls. per hour through open tubing, total depth 3,470 feet. Mid-Continent Drilling Co.'s No. 1 Tubbs, abandoned, total depth 2,265 feet, D. Sanches Survey. Yount Lee Oil Co.'s No. 8-B J. C. and R. S. McKinley, top sand 3,571 feet, initial production 55 bbls. per hour through eleven-sixteenths inch tubing choke, total depth 3,591 feet; No. 2-B E. M. Whatley, top sand 3,507 feet, initial production 40 bbls. per hour through eleven-sixteenths inch tubing choke, total depth 3,529 feet.

South Gregg County

Delta Drilling Co.'s No. 3 Hughey-Ross, top sand 3,526 feet, initial production 60 bbls. per hour through 1-inch tubing choke, total depth 3,574 feet. Canica Oil Co.'s No. 1 M. Jackson (formerly E. & F. Oil Co.), top sand 3,650 feet, initial production 185 bbls. per hour through open tubing, total depth 3,658 feet. Gulf Production Co.'s No. 10 R. H. Still, top sand 3,502 feet, initial production 42 bbls. per hour through open tubing, total depth 3,551 feet. Invincible Oil Co.'s No. 8 Weiss, top sand 3,537 feet, initial production 165 bbls. per hour through open tubing, total depth 3,557 feet. Sun Oil Co.'s No. 23 M. T. Cole, top sand 3,498 feet, initial production 73 bbls. per hour through open tubing, total depth 3,549 feet. Sun Oil Co.'s No. 5 A. G. Morton, top sand 3,504 feet, initial production 45 bbls. per hour through open tubing, total depth 3,518 feet.

North Rusk County

Devonian Oil Co.'s No. 16 Motley, top sand 3,729 feet, initial production 87 bbls. per hour through open tubing, total

depth 3,737 feet. Gulf Production Co.'s No. 17-C C. E. Christian, top sand 3,681 feet, initial production 70 bbls. per hour through open tubing, total depth 3,690 feet. Humble Oil & Refining Co.'s No. 17-A S. S. Laird, top sand 3,633 feet, initial production 92 bbls. per hour through three-quarters inch tubing choke, total depth 3,686 feet.

South Rusk County

Gulf Production Co.'s No. 23 G. G. Turner, top sand 3,735 feet, initial production 55 bbls. per hour through open tubing, total depth 3,737 feet. Humble Oil & Refining Co.'s No. 5 J. J. Pitner, top sand 3,665 feet, initial production 85 bbls. per hour through three-quarters inch tubing choke, total depth 3,749 feet; No. 22-A S. A. Plowman, top sand 3,650 feet, initial production 133 bbls. per hour through open tubing, total depth 3,678 feet.

Smith County

B. G. Byers' No. 1 L. Jackson, top sand 3,764 feet, initial production 125 bbls. per hour through open tubing, total depth 3,766 feet.

WILDCAT COMPLETIONS

Franklin County

Whiteoak Oil Co.'s No. 1 C. C. Clanton, top Pecan Gap 1,423 feet, base 1,540 feet, top Austin chalk 2,402 feet, top sand 3,377 feet, dry and abandoned, total depth 3,776 feet, S. McCreary Survey.

Rusk County

T. C. Castle and others' No. 1 Gary, top Pecan Gap 2,678 feet, base 3,050 feet, top Austin chalk 3,520 feet, top Georgetown lime 3,672 feet, dry and abandoned, total depth 3,812 feet, J. N. Latham Survey.

Van Zandt County

Roy Stumpff's No. 1 Higgs, top Pecan Gap 1,855 feet, dry and abandoned, total depth 2,950 feet, William Daniel Survey.

ROCKY MOUNTAIN RUNS

Average daily pipe line runs from fields in the Rocky Mountain territory for the week ending May 13 follow:

	Bbls.
WYOMING	
Salt Creek	19,520
Big Muddy	1,890
Badger Basin	40
Byron Garland	200
Dutton Creek	70
Dallas-Derby	230
Elk Basin	520
Ferris	30
Frannie	250
Grass Creek	1,730
Greybull	0
Hamilton Dome	880
Hudson	340
La Barge	540
Lance Creek	140
Lost Soldier	1,970
Midway	80
Oregon Basin	100
Osage	710
Pilot Butte	30
Rex Lake	0
Rock River	1,500
Poison Spider	210
Teapot	30
Total Wyoming	30,970
MONTANA	
Buckley-Border	350
Cat Creek	750
Cut Bank	460
Dry Creek	120
Kevin-Sunburst	3,170
Lake Basin	60
Pondera	1,000
Total Montana	5,910
COLORADO	
Florence	320
Fort Collins and Wellington	670
Iles Dome	570
Moffat	640
Orchard	140
Rangely	70
Tow Creek	260
Total Colorado	2,670
NEW MEXICO	
Artesia	535
Caprock	990
Hogback	210
Jal	1,145
Table Mesa	83
Eunice	457
Hobbs	29,822
Lea	2,443
Texas-Pacific	96
Rattlesnake	665
Total New Mexico	35,446
Total Rocky Mountain area	74,996
Total previous week	74,877
Difference	119

Natural Gasoline Industry Headed for Better Times

(Continued from Page 12)

the Bureau of Explosives regarding the design and construction of tank cars for the transportation of our products. You also recall the Saybolt patents and the Improvements patents investigation and litigation as well as a number of freight rate cases and liquid weight controversies which redounded to the benefit of the industry.

"In 1925 we inaugurated Doctor Brown's research into motor fuels particularly with reference to its volatility characteristics and their effect upon motor performance. This program was reported back as completed at our May meeting in 1930. Doctor Brown's work was so far reaching as to form the nucleus of the research programs of several other associations and companies and is only now reaching fulfillment in its application to actual motor fuels.

"In 1928 we co-operated with a section of the Bureau of Standards at Washington and financed, designed, tested and secured the approval of a gravity balance for measurement of specific gravity of gases. This standard apparatus is, with only minor changes, the standard of the whole industry today.

"In 1932, in co-operation with the co-operative fuel research steering committee, we financed a program of investigation into vapor locking characteristics of motor fuels by road testing automobiles under the direction of Doctor Bridgeman of the Bureau of Standards. The progress report of this work will be rendered you by Doctor Bridgeman at this meeting.

"The real value of any technical association is measured by the activities of its representative committees and it is, therefore, pertinent to make some mention of the individual committees and the work they have accomplished. The technical committee has been one of our most active committees and under its jurisdiction has come a survey of production and specifications of natural gasoline which led up to the latest report of the specifications committee. The committee also handled the development of the Reid method for vapor pressure determination and it has had general acceptance in the industry. More recently this committee has handled the direction of the program of vapor lock road testing under Doctor Bridgeman.

"I mentioned under the technical committee the survey for specifications. The specifications committee, using this survey, perfected our now current specifications for natural gasoline under which all gasoline sold east of the Rocky Mountains is graded. This was really a monumental piece of work.

"For a number of years we discussed in board and committee meetings the possibilities of a standard gas contract which would be universally adopted. This problem was finally reassigned to the gas contract committee, and after nearly two years of work this committee reported, the association adopted and the industry has used that standard form of gas contract.

"A newer committee, the standardization committee, for natural gasoline plant materials was formed a little over a year ago and has already laid down standards for a number of items of plant equipment."

Mr. Smith also enumerated the activities of other committees, including that of the liquefied gas committee, the report of which appears in this issue; the gas testing committee, also included here; the traffic committee and the plant operating meeting committee, which arranges an annual gathering of superintendents and field men in the Ranger, Tex., district. In concluding his address he said:

"May I also take this opportunity as a retiring president to thank the members, committees, directors and fellow officers for their excellent and unselfish attention to our association's business. My two years of service leave many pleasant memories and I pledge my own future support to your new officers and directors, and at the same time express the confident hope that all members will do likewise."

Employe Relationship

An important development now taking place throughout all industry and which has been evident within the natural gasoline industry for more than a year is the appreciation that labor must not be evaluated as a commodity would be. C. W. Brile, of the A. and M. College of Oklahoma, discussed the need of a closer and better understanding of the relationship between employer and employe. He said: "I think we will agree that we have reached the point where something will be done about it; and I am convinced, too, that something is being done about it. It is quite apparent that the antiquated theory of labor as a commodity has not yet passed, but is fast passing. The laborer is coming to be considered as a part of industrial organizations, with rights quite as well defined as those of the management. In the study of this problem, I have been amazed to find such abundant evidence that organizations of industrial leaders are giving so much attention to the development of plans of personnel procedure and closer relations with workers. The tendency to dwell upon the conflicts of interests rather than upon points of common interests is fast disappearing. Organizations of employers working with similar organizations of workers are seeking to develop a new attitude toward the corporation, the management and the job on the part of all members of the organization. Executives are fast coming to realize that they are not getting full value from the workers until their attitude is one of intelligent and enthusiastic co-operation."

As in previous meetings, the technical papers featured the convention. These appear in their entirety in this issue of The Oil and Gas Journal or will be published in an early issue. One of the most discussed papers was that of H. M. Trimble, of the Phillips Petroleum Co., in which he compared the merits of vapor recovery gasoline and natural gasoline as they are used in blends to make motor fuels to best suit the modern motors. This paper is published in this issue. Another paper of much practical value was that of S. S. Smith of the Shell Petroleum Corp. and L. S. Gregory of Black, Sivalls & Bryson, in which they discussed the application of Raoult's law to plant operation, particularly where high pressures are involved.

On Wednesday morning the comments of Dr. O. C. Bridgeman of the Bureau of Standards regarding work done there on the problem of vapor lock caused much discussion. In commenting upon the permissible vapor pressure of the motor fuel to be consumed in the present cars Doctor Bridgeman said: "In obtaining an estimate of the vapor pressures which are permissible in cars on the road at present three averages must be considered. Fuel line temperatures, vapor-handling capacity and fuel characteristics all vary over wide limts. In order to protect the majority of cars from vapor lock troubles, greater weight must be given to the higher fuel line temperatures, to the lower vapor-handling capacities and to the fuels which change little on evaporation. Taking these into consideration, it is believed that the permissible Reid vapor pressure at temperatures below 100° F. is 8 pounds per square inch, and at temperatures below 75° F. is 12 pounds per square inch."

Subsequent papers presented by Dr. G. G. Brown of the University of Michigan on "The Performance of Motor

R. C. Holmes Explains His Resignation As Chairman of Texas Corporation

R. C. Holmes, who on May 5 resigned as chairman of the board of The Texas Corporation and The Texas Company, to which office he was elected 10 days previously after having been president since 1926, is disposed to submit his case to the judgment of stockholders. Although Mr. Holmes resigned as chairman, he still remains a director.

Mr. Holmes, in a statement to The Oil and Gas Journal said:

"Since my resignation May 5 as chairman of the board of The Texas Corporation and its operating subsidiary, The Texas Company, I have been importuned by friends and by representatives of the press to state the reasons for my action. I had not intended to discuss the matter publicly, preferring to submit it at the proper time to the judgment of the stockholders. However, in view of the persistent and continuing requests for information, all in a spirit of friendly interest, I have decided to make a brief statement.

"My reasons for resigning are given in my letter to the board of directors of The Texas Corporation, dated May 5, which follows:

"'It is very evident that this board differs with me decidedly in respect to the policies to be followed in carrying out necessary activities which I have thought, and still think, to be so vital to the best interest of the company, of the oil industry, and our nation. Until April 24, the day before our stockholders' meeting, I conceived the policies which I have been following to be the policies of the company. Until then I did not know that these policies were considered by the board to be solely my policies, and that they were not in accord with the wishes of the board.

"'To permit you to tie my hands and to still my voice at a time such as this, when it is so apparent to anyone with understanding and who has the power, even in a slight degree, to assist in overcoming the factors that are so destructive to industry and to the welfare and existence of great numbers of people throughout the world, is unthinkable.

"'Our differences of opinion with respect to these policies have become so irreconcilable that I, of necessity, hereby tender my resignation as chairman of this board, to take effect immediately.'"

The policies referred to by Mr. Holmes in his letter of resignation are those relating to petroleum conservation, gasoline tax evasion, and rationalization of the industry. "I have been an ardent advocate of the conservation policy for many years," Mr. Holmes says, "acting as chairman of the general committee of the American Petroleum Institute on production and conservation of crude oil, and being a member of various delegations and committees which have co-operated and are now co-operating with the Federal and state governments in efforts to devise measures to conserve our oil supplies and restore the industry to a profitable basis of operation. The Roosevelt administration is giving hearty support to this movement. Regardless of what has happened, I shall continue to work for its advancement and ultimate success."

Mr. Holmes continues a director of The Texas Corporation and of The Texas Company, of which he has been a director for the past 27 years and with which company he has a record of 31 years of continuous service, and remains a large stockholder.

It is understood that neither W. A. Fisher nor G. C. Allen attended the directors' meeting of the corporation May 5. The former represents the Fisher Brothers of Detroit, while the latter also is an important stockholder and trustee of the Duke estate. The leading stockholding in The Texas Corporation is in the Gates estate, although this is not represented on the board. H. G. Lapham and J. H. Lapham are directors and have important stock interests, the latter being chairman of the executive committee.

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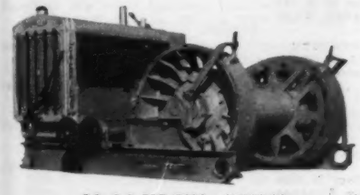
Model FS-35—$1250.00
For wells of not more than 3100-foot depth.



Model HS-5500—$2100.00
Designed especially for East Texas Field.

Model HB-35—$1900.00
The ideal dual-purpose unit. It serves as both tractor and wellservicing outfit.

Safety

SAFETY—The allowance of more-than-ample margins of safety in material and construction, and careful consideration for operating safety are prime essentials in our design. All controls are positive and are conveniently arranged; complete visibility for the operator is provided, and our exclusive Wedge-Action type of brakes insure constant control whether hoisting or lowering.

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SPEED—The provision for a wide range of selective transmission speeds, and by employing a full release drum—floating on Timken taper bearings, which operate in a constant bath of oil—controlled by foot and hand clutch-levers, we insure ability to get the job done in shortest possible time.

Durability

DURABILITY—All materials are selected for their particular adaptability to the needs of each part; toughness where toughness is needed; hardness where hardness will serve; strength throughout, and micrometer precision in all machined parts.

Simplicity

SIMPLICITY—Every operating condition has been studied by men familiar with the conditions and problems which must be met in the field. Utmost simplicity, a minimum of moving parts and broad standardization contribute to most satisfactory operation and long life.

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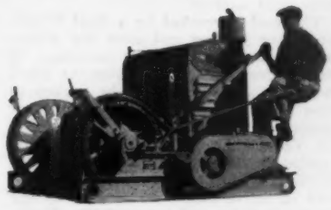
ECONOMY—The lightest possible gross weight consistent with ample strength, and the employment of power plants of the slow speed, heavy duty type are matters of foremost consideration in our design. First costs are low as a result of scientific production methods. Maintenance and operating costs are lowered through employment of the best of standardized materials throughout.

Model QS-6ZK—$1500.00
A 42.5 H.P. Six Cylinder Motor and large drum capacity.



Model H8-6-SRKL—$2600.00
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A combination Tractor and Servicing Unit that should handle any 5000 to 6000-foot production.

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Fuels" and one by Emby Kaye of the Skelly Oil Co. on "The Further Consideration of the Disposal of Excess Volatility" caused considerable open discussion which showed the interest aroused. Doctor Brown's paper appears in this issue and Mr. Kaye's paper will appear at an early date.

Entertainment

The entertainment of the convention consisted of the usual luncheon at noon on Monday and Tuesday, a dance Monday night and a smoker on Tuesday night. These were arranged and financed by the Natural Gasoline Supply Men's Association with George W. Probst of Clark Brothers Co., A. J. Kerr of the Pittsburgh Equitable Meter Co., and M. H. Kotzebue of the Tulsa Boiler & Machinery Co. as the respective chairmen of these committees.

Tulsa's Flying Oil Well Fire Fighter Puts Out Blaze in South American Field

By L. G. E. BIGNELL
Petroleum Engineering Editor

After spending about three weeks at the oil well fire on the property of the Colombia Petroleum Co., subsidiary of the Gulf Oil Corp. on the Barco Concession in Colombia, S. A., M. M. Kinley was able to completely extinguish the fire and place the well under control. Mr. Kinley left Tulsa during the last week in March and has just returned, having flown to and from Maracaibo, Venezuela, from which point he was transported to the well by a combination of lake boat, river craft, railroad and mule back.

This concession is located in the eastern portion of Colombia not far from the Venezuela border and is surrounded by a dense tropical jungle which is inhabited by an unfriendly tribe of Indians who look upon hunting white men in much the same light as the white men consider big game hunting in this country. The Indians use poisoned arrows and never appear in the open when making a kill so it requires constant alertness on the part of the white men in that territory to protect themselves against those wild natives.

The well is reached by a final 30-mile mule back journey and after Mr. Kinley arrived there he found it necessary to wait a few days for supplies to reach the camp as they had to be packed in from the rail head to the south of the concession. Howard Quinlan, manager for the Venezuelan Gulf Oil Co., and Roy Newton, drilling superintendent in charge of the work on the Barco Concession, were in active charge of the well during the fire fighting and rendered Mr. Kinley valuable assistance and any delays that may have occurred were due primarily to the inaccessible location of the fire and difficulties of transporting material during the dry season which was just ending when the fire broke out.

This well was drilling at about 490 feet when it blew out unexpectedly and started to produce gas and oil which caught fire and burned as discharged through the gooseneck on the Kelly joint that remained in the hole until Mr. Kinley succeeded in shooting it off with about 200 pounds of solid nitroglycerin.

To make matters worse the well had upper water break into the hole and this water was delivered along with the gas and oil through the gooseneck and so directed downward that a large hole was washed around the well and toward the creek upon the banks of which the rig was located. It is estimated that the well made about 15,000 bbls. of water per day and after the Kelly joint was shot in two this water was heated and fell as a hot rain much to the discomfort of the workmen.

The hole was cased with about 140 feet of 11-inch casing set as a surface string and cemented and to this casing was attached the master gate valve, blowout preventer and a cross, one side of which was closed with a bull plug and the other fitted with a valve which was open when the well came in out of control.

As the sand around the well was washed away by the stream of water flowing out of the gooseneck the derrick foundations gave away and the turntable, drawworks and all equipment on the floor fell into the opening. After the Kelly was shot in two this mess had to be cleaned away and after that was done Mr. Kinley rigged up a swage nipple on the end of 45 feet of 4-inch braced pipe and set the nipple down inside the open end of the Kelly joint.

By this means mud and water was pumped into the well and it was killed for several hours. During this period the top of the 11-inch casing was removed by burning with torches and the top of the Kelly joint cut away also.

This made the well ready for capping but during the night the gas broke through again and became ignited and it was necessary to rig up a 45-foot mast made of 6-inch casing on the bank of the gully above the well and fit this mast with a 60-foot boom.

A complete 8-inch christmas tree was then rigged up and fitted with heavy duty master gate at the upper end and a side connection about two-thirds of the way down also fitted with heavy valve. At the lower end of the christmas tree an inverted bradenhead was attached that would fit over the upper end of the 11-inch casing and the top of the Kelly joint. In this inverted bradenhead an opening was made through which the mud pipe was attached after the christmas tree was lowered into position and thoroughly anchored. As the top and side valves were both open when the christmas tree was set down the flow from the well was directed, first upward and then off to one side.

When the mixture of heavy mud and baroid was ready the side valve was closed and the well again killed and this time the job was entirely successful. The hole was later filled with cement and then capped with a concrete block and that particular location will be abandoned.

This work was all done during daylight shifts by Mr. Kinley and about 12 American drillers gathered together for this special duty. About 200 natives were present to furnish manpower but outside of a strong back contributed very little to the actual work. The rainy reason had started before the work was well under way and the entire surface around the well became a mire of soft clay which did not aid any in carrying on.

The well is of special interest because it came in first as a gasser but quickly blew into a very light gravity straw colored oil. The water apparently broke in from above and while there was a large quantity of it it was not sufficient to kill the pressure in the oil and gas formation.

TEST 100 PER CENT TAX LEVY

The Oklahoma Supreme Court will rule on the authority of the Oklahoma Tax Commission to collect gross production tax levies from the oil companies on the basis of 100 per cent of the oil and gas production instead of the customary 97 per cent. An appeal was filed in the state supreme court by the Shell Petroleum Corp. The court will be asked to determine whether the tax commission may collect taxes on the 3 per cent of production since the gross production tax law became effective in 1916. Heretofore the State has collected upon 97 per cent of the oil and gas produced, and the other 3 per cent being deducted for evaporation and sediment.

Bradford-Allegany Producers Seek Help

BRADFORD, Pa., May 13.—Following the 20-cent reduction in the price of Pennsylvania Grade oil posted by all the crude oil purchasers, the following telegram was sent to Harold Ickes, Secretary of the Interior, at Washington:

"Bradford District Oil Producers Association representing 1,800 producers and 40,000 wells ask your help in bringing about through legislation or otherwise relief from oppressive price for crude oil. Price cut 20 cents today and our producers losing over $1 per barrel. Unless something done immediately it means annihilation of the Pennsylvania industry and closely affiliated industries, such as supply stores and banks, and will add vast numbers to present unemployed. Signed, Bradford District Oil Producers Association, R. M. Haskell, president."

The New York State Oil Producers Association forwarded a similar telegram to the Secretary of the Interior yesterday.

Pennsylvania Grade oil producers have been keeping their crude oil production down to about 55,000 bbls. per day. They could easily produce 70,000 bbls. per day. In the Bradford and Allegany Fields production has been kept down to about 31,000 bbls. per day, whereas these two fields could easily produce 45,000 bbls. per day if there was a market for the oil at profitable prices. Under present-day prices Pennsylvania Grade producers are actually losing about $55,000 per day. Of this Bradford and Allegany producers are losing about $31,000 per day.

East Central Texas Wildcats

(Continued from Page 43)

Sun Oil Co.'s No. 4-A Allen Tooke, 450 ft. from W line and 6,850 ft. from S line of survey, W. H. Castleberry Sur. ..... Rig up.

L. W. Tarkington's No. 1-A Mrs. A. M. Greggston, 187 ft. N of Johnston's No. 1 Greggston and center of N and S lines of lease, M. Dillard Sur. ..... Derrick.

The Texas Company's No. 18 M. T. Cole, 4,150 ft. E and 500 ft. N of most easterly SW cor. of survey, E. L. Walker Sur. ..... Rig up.

M. E. Trapp's No. 1 R. B. White, 430 ft. N and 50 ft. E of SW cor. of Magnolia's White tract and survey, D. Moore Sur. ..... Drlg. 1,106 ft.

Yeager et al's No. 1 Howard, 660 ft. E of Harry Lewis' No. 1 King, Mary Scott Sur. ..... Rig up.

HILL COUNTY

Spikes et al's No. 1 Holman, 150 ft. from NW cor. of 100-ac. tract, one-half mile S of Mt. Calm, Latham Sur. ..... Rig up.

HOPKINS COUNTY

E. P. Corley's No. 1 Jumper ..... Moving in rig; T.D. 1,680 ft

Culberson & Lynch's No. 1 Louis Stribling, 150 ft. from NW cor. of tract and lease, Thomas Norris Sur. .. Rig up.

KAUFMAN COUNTY

Slay-Bentley-Brewer et al's No. 1 J. B. Hunter, 300 ft. from S line and 150 ft. from SE line of 500-ac. tract, 4 miles S of Terrell, R. Sowell Sur. ..... T.D. 700 ft.

LIMESTONE COUNTY

C. C. Curtis et al's No. 1 Emma Daniels, 150 ft. from W line and 150 ft. from S line of 42.5-ac. tract in Pedro Varela Sur. ..... Set surface csg. 60 ft.

RED RIVER COUNTY

Ajo Oil Co.'s No. 1 Nickels & Daniels, center of S 780 acres of 1,568-ac. tract, 8 miles N of English, Hugh B. Shaw Sur. ..... Derrick.

RUSK COUNTY

Chicago Oil Co.'s No. 2 C. O. Christian, 175 ft. from S line and 1,125 ft. from E line of survey, J. S. Whiteman Sur. ..... Waiting on cmt. to set; T.D. 3,746 ft.

Combined Oil Co.'s No. 14 G. W. Eaton, 330 ft. from S line and midway between Nos. 6 and 9, F. Cordova Sur. ..... Derrick.

Griffin & Barnes' No. 1 fee, 12 ft. from S and W lines of 1-ac. tract, J. B. De Cadena Sur. ..... Waiting on cmt. to set.

H. B. W. Oil Co.'s No. 3 Redwine, 150 ft. from E line and center of Payne's No. 1 Redwine, Juan Ximenes Sur. ..... Derrick.

Humble Oil & Refining Co.'s No. 1 Maggie Watkins, 330 ft. from N and W lines of 119-ac. tract, Andrew Miller Sur. ..... Waiting on cmt. to set; T.D. 3,594 ft.

Humble Oil & Refining Co.'s No. 5-B W. P. Moore, 330 ft. from S line and 336 ft. from E line of 61.3-ac. tract, T. J. Martin Sur. ..... Drlg. 103 ft.

Humble Oil & Refining Co.'s No. 20-A S. A. Plowman, 330 ft. from S line and 5,530 ft. from E line of survey, F. Cordova Sur. ..... Drlg. 1,938 ft.

Hunt Production Co.'s No. 3-A Joe Lee, 330 ft. from N and W lines of lease and survey, J. Crouch Sur. .... Drlg. 2,865 ft.

Jordan & Ramsey's No. 1 L. W. Prior, 330 ft. from N line and 697 ft. from E line of 53-ac. lease, Walker Pettit Sur. ..... Waiting for surface csg.

Kimble & Acre's No. 1 Frederick, 150 ft. from S line and center of E and W lines of 10-ac. lease, Juan Ximenes Sur. ..... Derrick.

Earl and Martin's No. 2 Pinkston, 2,100 ft. from S line and 4,900 ft. from W line of survey, M. J. Pru Sur. .... Rig up.

Walker Murray et al's No. 1 W. H. Arnold, 330 ft. from S and W lines of 50-ac. tract, Levi N. Sparks Sur. ..... Fishing; T.D. 2,735 ft.

Olson Bros.' No. 5 J. T. Brown, 300 ft. from N line and 700 ft. from W line of lease, M. J. Pru Sur. .... Derrick.

Roberts Bros.' No. 2 W. J. Brightwell, 2,480 ft. from N line and 400 ft. from W line of survey, R. E. Winn Sur. ..... Rig up.

Rose Seward's No. 1 Burton, J. J. T'Barbo Sur. ..... T.D. 3,387 ft.

Snyder et al's No. 2 Stewart, 174 ft. NW of No. 1 and 190 ft. SE of C. L. Archer's No. 1 J. H. Stewart, John Womack Sur. ..... Derrick.

Turman Oil Co.'s No. 7 R. Dark, 330 ft. from S and W lines of lease, M. J. Pru Sur. ..... Rig up.

Westheimer and Daube's No. 4 Brightwell, 150 ft. from S line and 3,010 ft. from W line of survey, E. G. Sevier Sur. ..... Waiting on cmt. to set; T.D. 3,574 ft.

Weaver-Crim Oil Co.'s No. 2-B F. Bean, 700 ft. from S line and 1,500 ft. from W line of survey, Mary Cogswell Sur. ..... Rig up.

SMITH COUNTY

Kimble and Smith's No. 1 N. Green, 158 ft. from S line and 1,450 ft. from W line of survey, M. Hussner Sur. ..... Rig up.

Long Drilling Co.'s No. 3 G. A. Turner, D. W. Campbell Sur. ..... Derrick.

Mundt et al's No. 1 O. G. Funderburg, 330 ft. from NW cor. of 63-ac. tract, Victory Loupy Sur. ..... Spudding 100 ft.

The Texas Company's No. 6-B A. S. Jarvis, 660 ft. from S line and 330 ft. from W line of lease, M. D. L. S. Coy Sur. ..... Rig up.

UPSHUR COUNTY

Wadley and Evans' No. 1 W. S. Jones, 330 ft. from S and E lines of 100-ac. lease, James M. Dunn Sur. .... T.D. 3,690 ft.; swabbed salt water; swabbing.

VAN ZANDT COUNTY

C. P. Cole et al's No. 1 Mrs. S. Tunnell, 150 ft. from S and E lines of 46-ac. tract, M. Gross Sur. ..... Derrick.
Gulf Oil Co.'s No. 1 Gillentine, 150 ft. from S and E E lines of E 4 acres of 42-ac. tract in Nacogdoches County School Land Sur. ..... Rig up.
Gulf Oil Co.'s No. 1 S. R. Stone, 150 ft. out of SW cor. of 92-ac. tract ..... Drlg. 1,110 ft.
G. S. Manning and W. H. Carlin's No. 1 Howell Bivens, 150 ft. E of the E line of Mollie High 5 acres and 150 ft. N of S line of W. H. Bunch Sur. ..... Drlg. 800 ft.
Petroleum Pipe Line Co.'s No. 1 Mrs. S. S. McGee, 173 ft. from N and W lines of 53-ac. tract in Blk. No. 2, William Daniel Sur. ..... T.D. 1,277 ft.; 600 ft. oil in hole; testing.
Petroleum Pipe Line Co.'s No. 1-A Mrs. S. McGee, 173 ft. from S line and 660 ft. from E line of Blk. No. 30, William Daniel Sur. ..... Derrick.
Pure Oil Co.'s No. 3 D. O. Mayo, 200 ft. N of S line and 225 ft. E of W line of D. O. Mayo 39.5-ac. tract, J. Prado Sur. ..... Waiting on cmt. to set.
Pure Oil Co.'s No. 5 Russell, 150 ft. from S and 792 ft. from W of 20-ac. tract in David Rose Sur. ..... Drlg. 1,785 ft.
Pure Oil Co.'s No. 6 H. P. Tunnell, 595 ft. S of N line and 225 ft. W of E line of H. P. Tunnell 131.5-ac. tract, James Rose Sur. ..... Derrick.
Pure Oil Co.'s No. 7 C. L. Swain, 250 ft. S of N line and 250 ft. W of E line of O. L. Swain, S 40-ac. tract of E 70-ac. tract, John Walling Sur. ..... Derrick.
Reasonover et al's No. 1 D. T. Cole, 150 ft. from S and E lines of 45-ac. tract, Nacogdoches County School Land Sur. ..... Rig up.
Rowland and Naylor's No. 1 Moore Grocery, 163 ft. from W line and 1,563 ft. from E line and center of N and S lines of 116-ac. tract, William Daniel Sur. .... Drlg. 1,402 ft.
Van Oil Association's No. 1 Tankersley, 200 ft. from E and 1,000 ft. from S of farm, L. Landers Sur. ..... T.D. 2,850 ft.; skid 50 ft. W and set 10-in. csg. at 181 ft.; waiting on cmt.

WOOD COUNTY

Hull and Short's No. 1 T. H. Peterson, 600 ft. from S and 200 ft. from E line of 320-ac. tract, 4 miles E of Mineola, W. B. McNutt Sur. ..... Drlg. 3,285 ft.

Wildcat Operations in West Texas

(Continued from Page 40)

GARZA COUNTY

P.H.E. Oil Co.'s No. 1 Stoker ..... T.D. 2,909 ft.
H. O. Wooten's No. 2 W. P. Edwards, 1,650 ft. from E line and 330 ft. from S line of Sec. 17, T.&P.R.R. Sur., Blk. 33, Twp. 1s ..... Drlg. 1,650 ft.

HOWARD COUNTY

M. D. Bryant et al's No. 1 L. C. Denman, 2,310 ft. from S and W lines of Sec. 10, Blk. 30, Twp. 1s, T.&P. Sur. ..... Underreaming 1,630 ft.
Eppenauer et al's No. 1 Leatherwood, C of SE of NW, Sec. 25, Blk. 33, Twp. 1s, T.&P. Sur. ..... Material on ground.
L. C. Harrison's No. 4 L. C. Denman, 2,370 ft. from the E line and 2,325 ft. from S line of Sec. 10, T.&P.R.R. Sur., Blk. 30, Twp. 1s ..... Drlg. 1,230 ft.
Mid-Continent Pet. Co.'s No. 2 Denman, 330 ft. from S and E of Sec. 10, Blk. 30, Twp. 1s, T.&P. Sur. ..... T.P. 2,747-57 ft.; shot 280 qts.; flowed 283 bbls. of oil.
Myers et al's No. 1 Denman, 2,305 ft. from S and 2,320 ft. from E, Sec. 14, Blk. 30, Twp. 1s, T.&P. Sur. ..... T.D. 2,853 ft.; S.D.; show oil 2,730 ft.
Sinclair Prairie Oil Co.'s No. 1 Denman, 330 ft. from N line and 330 ft. from W line of Sec. 14, Blk. 30, Twp. 1s, T.&P. Sur. ..... Waiting on cmt. to set 2,360 ft.
Sinclair Prairie Oil Co.'s No. 6 Dodge, 330 ft. from S line and 330 ft. from W line of Sec. 11, Blk. 30, Twp. 1s, T.&P. Sur. ..... Waiting on cmt. to set 2,329 ft.
Sinclair Prairie Oil Co.'s No. 5 Dodge, 2,310 ft. from N and 330 ft. from W. Sec. 11, Blk. 30, Twp. 1s, T.&P. Sur. ..... T.P. 2,665 ft.; T.D. 2,815 ft.
Jack Wallace et al's No. 1 Scott, 990 ft. from N and 330 ft. from E lines of Sec. 98, Blk. 29, W.&N.W. Sur. ..... Running csg. 1,250 ft.

IRION COUNTY

Perry Fox's No. 1 W. C. Lawhorn, 200 ft. from N and 500 ft. from W of Sur. No. 731 ..... S.D. 547 ft.

JONES COUNTY

Cender Pet. Co.'s No. 1 Holt, 1,980 ft. from S and 1,980 ft. from W, Sec. 4, Blk. 20, T.&P. Sur. ..... Moving in machine.
Dyer's No. 1 Odom, 200 ft. from S and 170 ft. from W of N 320 acres, G. Zumwalt Sur. ..... Moving in tools.
Johnson's No. 1 Huddleston, 165 ft. from S and W of N half of N half of Sec. 39, Blk. 18, T.&P. Sur. ..... Running casing 2,505 ft.

LOVING COUNTY

A. & M. Pet. Corp.'s No. 1 Wheat, 2,310 ft. SW, 990 ft. SE, Sec. 71, Blk. 1, W.&N.W. Sur. ..... Cellar.
Eppenauer Drlg. Co.'s No. 1-A Victor, 330 ft. from SW and 338 ft. from SE of NW of N half Sec. 4, Blk. 2, W.&N.W. Sur. ..... Rigging up standard tools.
Goldman et al's No. 2 Allen, 330 ft. from NW, 2,310 ft. from SW, Sec. 96, Blk. 1, W.&N.W. Sur. ..... Rig.
Goldman et al's No. 1 Reagan-McElvain, 330 ft. from NE, 2,310 ft. from NW, Sec. 84, Blk. 1, W.&N.W. Sur. .. Cellar.

PECOS COUNTY

A. & M. Pet. Co.'s No. 1 University, 1,725 ft. from S line and 330 ft. from E line of Sec. 31, Blk. 16, University Sur. ..... S.D. 765 ft.
Bennett et al's No. 1 Powell, 330 ft. from SW and SE, Sec. 76, Blk. 10, H.&G.N. Sur. ..... S.D. 1,725 ft.
Humble Oil & Ref. Co.'s No. 1 White-Baker Co., 1,320 ft. from N and E lines of Sec. 44, Blk. 2, T.C.R.R. Sur. ..... S.D. 1,700 ft.
Kimberlin et al's No. 1 B. D. Gregg, 2,488 ft. from NW and 150 ft. from NE, Sec. 101, Blk. 10, H.&G.N. Sur... S.D. 288 ft.
Wahlenmaier et al's No. 1 Monroe, 6,960 ft. W and 330 ft. N from SE cor. of Sec. 41, Blk. 1, L.&G.N. Sur. ... S.D. 1,915 ft.

REAGAN COUNTY

Big Lake Oil Co.'s No. 8-C University, 710 ft. from S and 2,410 ft. from E, Sec. 13, Blk. 3 ..... Flowed 2,072 bbls.; T.D. 8,800 ft.
Big Lake Oil (Co.'s No. 9-C University, 3,410 ft. from N and 765 ft. from E, Sec. 12, Blk. 3 ..... Tested 250 bbls. of oil per hour through drill pipe; T.D. 8,580 ft.
Big Lake Oil Co.'s No. 10-C University, 1,025 ft. from S and 375 ft. from W, Sec. 25, Blk. 9 ..... Drlg. 5,862 ft.
Big Lake Oil Co.'s No. 11-C University, 2,300 ft. from S line and 2,140 ft. from E line, Sec. 12, Blk. 3, University Sur. ..... Drlg. 2,130 ft.
Continental Oil Co.'s No. 7-B University, 1,900 ft. from N and 650 ft. from W, Sec. 36, Blk. 9 ..... Drlg. 8,314 ft.
Continental Oil Co.'s No. 8-B University, 1,200 ft. from S and 1,775 ft. from W, Sec. 36, Blk. 9 ..... Drlg. 8,339 ft.
Noel T. Lawson's No. 1 Hughes, 1,980 ft. from S line and 1,980 ft. from E line of Sec. 23, Blk. F, C.&M. Sur.... Drlg. 2,105 ft.
J. P. Williams et al's No. 1 Scott, 1,650 ft. from N and 330 ft. from W, Sec. 179, Blk. 1, T.&P. Sur. ..... Straightening hole; T.D. 1,350 ft.

RUNNELS COUNTY

Dutton et al's No. 1 Dean, 5,475 ft. from NE and 1,048 ft. from NW in J. Heil Sur. No. 519 ..... S.O. 3,417-20 ft.; S.D. 3,440 ft.
John Caster's No. 1 Hall, 330 ft. from S and W, Sec. 149, E.T.R.R. Sur. ..... Spudded.

SCHLEICHER COUNTY

Eastland Oil Co.'s No. 1 Joe Tisdale, C Sec. 39, Blk. M, G.H.&S.A. Sur. ..... Fishing; T.D. 5,924 ft.
Wesner et al's No. 1 Nicks, 2,310 ft. from N and 2,303 ft. from E of Sec. 77, Blk. LL, T.C. Sur. ..... Fishing; T.D. 6,250 ft.

UPTON COUNTY

Gulf Prod. Co.'s No. 103 McElroy, 1,980 ft. from S and 660 ft. from W, Sec. 197, Blk. F, C.C.S.D.&R.G.N.G.... Drlg. 900 ft.

WARD COUNTY

Atlantic Oil Prod. Co.'s No. 1 University, 330 ft. S and E, Sec. 3, Blk. 16 ..... Fishing 2,725 ft.
George Bentley et al's No. 1 C. Bergman, 330 ft. from NE line and 2,310 ft. from NW lines of Sec. 26, Blk. 5, H.&T.C. Sur. ..... S.D. 2,647 ft.
George Bentley et al's No. 1 A. Emory, 1,830 ft. from NE line and 2,310 ft. from NW line of Sec. 26, Blk. 5, H.&T.C. Sur. ..... Drlg. 2,245 ft.
W. A. Black et al's No. 1 Ann B. Gordon, 990 ft. from NW and 330 ft. from NE lines of Sec. 6, Blk. 34, H.&T.C. Sur. ..... Prepare to drill deeper; T.D. 3,290 ft.
Sundy et al's No. 1 Bennett, 2,310 ft. from NW and SW Sec. 16, Blk. 34, H.&T.C. Sur. ..... Swabbing and cleaning out; T.D. 2,632 ft.
Eppenauer Drlg. Co.'s No. 1 G. S. Comos, 498 ft. from N line and 438 ft. from NW line of Sec. 4, J. W. Hollingsworth Sur. ..... Rig up.
Eppenauer Drlg. Co.'s No. 1 University, 330 ft. from N and 440 ft. from E of S half of Blk. 16 ..... Derrick.
Gerber O. & G. Co.'s No. 1 Stubbs, 330 ft. from S, 990 ft. from W, Sec. 9, Blk. 3, B.&B. Sur. ..... Cellar.
Graham Corp.'s No. 1 Bennett, 2,310 ft. from NE line and 330 ft. from SE line of Sec. 16, Blk. 34, H.&T.C. Sur. ..... Drlg. 2,247 ft.
Gulf Prod. Co.'s No. 16 Hutchings, 1,932 ft. from S and 1,650 ft. from W, Sec. 6, Blk. F ..... Swabbing and cleaning out; T.D. 2,754 ft.
Gulf Prod. Co.'s No. 17 Hutchings, 330 ft. from W line and 1,151 ft. from S line of Sec. 5, Blk. A, G.&M.M.B.&A. Sur. ..... Drlg. 2,150 ft.
Gulf Prod. Co.'s No. 30 O'Brien, 990 ft. from S line and 660 ft. from W line of Sec. 6, Blk. F, G.&M.M.B.&A. Sur. ..... Running csg. 2,490 ft.
Humble Oil & Ref. Co.'s No. 1 Louis, Richter et al, 1,650 ft. from the NE line and 990 ft. from SE line of Sec. 27, H.&T.C. Sur., Blk. 34 ..... Drlg. 1,527 ft.
Skelly Oil Co.'s No. 2 Brillhart, 1,320 ft. from SE line of Sec. 13, Blk. 34, H.&T.C. Sur. ..... S.D. 2,482 ft.; show oil 2,436-38 ft.
Sturm-Simms' No. 4 Jones, 2,310 ft. from NE line and 1,650 ft. from S line of Sec. 25, Blk. B-29, P.S.L. Sur... Drlg. 2,020 ft.
Wahlenmaier Pet. Corp.'s No. 1 Bergman, 2,310 ft. from NE line and 1,650 ft. from SE line of Sec. 26, H.&T.C. Sur. ..... Drlg. 1,020 ft.

WINKLER COUNTY

Colonial Oil Co.'s No. 1 State vacancy, 330 ft. E and 102 ft. N of NW cor. Sec. 2, Blk. 77, P.S.L. Sur. .... T.P. 2,848 ft.; T.D. 3,147 ft.
Sid Richardson's No. 1 State-Scarborough, 1,320 ft. E and 102½ ft. N of the NW cor. of Sec. 1, School Blk. 77, located in Sur. No. 1, Blk. WF ..... Fishing for tools; T.D. 2,841 ft.

Wildcat Operations in Texas Panhandle

Week Ending May 13

CARSON COUNTY

Company, well, farm name, section and block— Remarks:
The Texas Co.'s No. 2-B Garner, 990 ft. N and E, Sec. 95, Blk. 4, I.&G.N. Sur. ..... T.D. 2,335 ft.

CHILDRESS COUNTY

G. V. McClintock et al's No. 1 B. F. Moore, C Sec. 47, F. P. Knott Sur. ..... S.D. 800 ft.

COLLINGSWORTH COUNTY

Tittle, Cochran et al's No. 1 Boyles, 150 ft. S and E of Sec. 90, Blk. 14, H.&G.N. Sur. ..... Skidded rig 30 ft. Drlg. 100 ft. on new hole.

GRAY COUNTY

Gordan Burch's No. 1 Laugham, 990 ft. S, 330 ft. E. Sec. 1, W½ NE, Sec. 1, Blk. B-2, H.&G.N. Sur. ..... S.D. 2,927 ft.
Sam Danner's No. 1 Cobb, 330 ft. S and W NE, Sec. 165, Blk. 3, I.&G.N. Sur. ..... S.D. 3,334 ft.
R. Dunlop's No. 1 Priest, 990 ft. S and 330 ft. W Sec. 14, Blk. S, J. C. Short Survey ..... Rig on ground.
Hendron et al's No. 1 Husselby, 330 ft. S and E of SW SW Sec. 11, Blk. A-9, H.&G.N. Sur. ..... Rig.
Mazda-Shell's No. 4 Coombs-Worley, 990 ft. from N line 330 ft. from E line, Sec. 35, Blk. 3, I.&G.N. Sur... Rig.
Ochiltree et al's No. 1 Hughey, 360 ft. S, 330 ft. E E half SE, Sec. 129, Blk. 3, I.&G.N. Sur. ..... T.D. 3,257 ft; T.P. 3,170 ft; shot with 100 qts. from 3,170-3,240 ft.
Skelly Oil Co.'s No. 1 C. Thut, 330 ft. from S line, 330 ft. from W line, SW Sec. 1, H.&G.N. Sur., Blk. 1.... S.D. 2,804 ft.
Tedesco-Bell O. & G. Co.'s No. 4 Morse, 990 ft. N and W SE, Sec. 1, Blk. 24, H.&G.N. Sur. ..... T.D. 2,542 ft; T.P. 2,487 ft; to shoot.
The Texas Co.'s No. 4 Brown, 330 ft. N, 990 ft. W of W½ Sec. 137, Blk. 3, I.&G.N. Sur. ..... Set csg. 3,065 ft.
Geo. Travis' No. 3-B Webb, 990 ft. N and W, Sec. 61, Blk. 25, H.&G.N. Sur. ..... T.D. 565 ft.
Warner Oil Co.'s No. 1 Webb, 660 ft. from S and W of W 80 of N½ Sec. 42, Blk. 25 ..... Cmtd. 8¼-in. csg. at 2,067 ft.
Wilcox O. & G. Co.'s No. 22 Combs-Worley, 330 ft. N and E, W½ Sec. 35, Blk. 3, I.&G.N. Sur. ..... Rig up standard tools.

HUTCHINSON COUNTY

Alexander's No. 1 Cockrell, 330 ft. N and E of E 80 of S 160, Sec. 3, Blk. M-2, T.C. Sur. ..... T.D. 3,029 ft; to shoot.
Badger Oil Co.'s No. 5 Lewis, 2,278 ft. from S, 330 ft. from W, Sec. 18, Blk. L, E.L.&R.R. Sur. ..... Set csg. 430 ft.
Dixon Creek Oil Co.'s No. 1 Haile, 660 ft. east of Alexander's No. 1 Cockrell, Sec. 4, Blk. M-21, T.C.R.R... Rig up.
W. E. Means et al's No. 1 Pond, 330 ft. S and E, N½ of E 165½ acres, Sec. 2, Blk. M-21, T.C.R.R. Sur. .. Drlg. 250 ft.
H. Stekol's No. 4-D G. A. Whittenburg, 450 ft. from N line, 990 ft. from W line, Sec. 35, Blk. M-23, T.C. R.R. Sur. ..... Rig up.
Texlivania Oil Co.'s No. 1 Haile, 330 ft. S, 330 ft. W, Sec. 16, Blk. 1, E.L.R.R. Sur. ..... Cleaning out, T.D. 3,024 ft.

RANDALL COUNTY

Woolsey & Devore's No. 1 Belew, 330 ft. N and 1320 ft. E of NE, Sec. 35, Blk. 2, A.B.&M. Sur. ..... Cellar

ROBERTS COUNTY

Chicken Creek Oil Co.'s No. 1 Ledrick, 330 ft. N and W, Sec. 55, Blk. C, G.&M. Sur. ..... Recmtng. csg.; T.D. 4,980 ft.

WHEELER COUNTY

Bell O. & G. Co.'s No. 1 Evans, 330 ft. N and E of NW Sec. 51, Blk. 24, H.&G.N. Sur. ..... S.D. 1,530 ft.
Delaney et al's No. 1 Sitter, 330 ft. from S and W of E half NE, Sec. 33, Blk. 24 ..... Est. 15,000,000 ft. gas; S.D. 3,711 ft.
Helena O. & G. Co. et al's No. 1 Belew, C NE SW, Sec. 59 ..... S.D. 2,267 ft.
Rogers & Harner's No. 1 J. O. Clark, 990 ft. S and W of Sec. 6, Blk. 24, H.&G.N. Sur. ..... Rig.
The Texas Co.'s No. 2 Bentley, 330 ft. N and W of W½ of SW¼, Sec. 42, Blk. 24, H.&G.N. Survey.... Rig up.

Strake Could Not Convince Others, So Drilled Himself

(Continued from Page 15)

Strake Oil Corp., a Texas corporation, had organized also Strake Petroleum, Inc., a Delaware corporation, both virtually owned by himself.

Mr. Strake's field superintendent from the start has been his brother-in-law, W. J. Pfiffner, of St. Louis, who was with him in Mexico and now is in charge of all Strake operations. Mr. Strake is quick to accord to his superintendent a full measure of credit for the success of his venture. He declares that but for the efficiency, fidelity and tireless zeal of his brother-in-law and the drilling crew working under him the Conroe Field, rated as second in importance among the country's oil areas, would still be merely a stretch of timberland, disturbed only by the saw and ax of the railroad-tie cutter.

Two Strings of Tools Operating

Through his two companies Mr. Strake keeps two strings of tools operating continually on leases which he retained for himself on 4,000 acres in the Conroe area. On May 1 of the present year he had a quarter interest in 40 wells completed or being drilled by the Humble and 30 completed or being drilled by the Tide Water, in addition to several wells owned outright by himself. The Strake Oil Corp.'s second well, drilled near the discovery, was completed June 5, 1932, with an initial estimated flow of 2,000 bbls. of black oil. The Moran Corp., organized by W. T. Moran, of Houston, laid a pipe line from the No. 1 well to Conroe, and that town now has gas for light and fuel. It is laying a 10-inch line from the field to Houston. A projected pipe line from the field to the Houston Ship Channel is expected to afford an additional outlet for oil produced. A topping plant, with a capacity of 250 bbls. of gasoline daily has been put into operation by the Conroe Refining Corp. near the Strake wells.

The Strake discovery has imparted fresh impetus to wildcatting operations along what now is designated as the Conroe trend, stretching for several hundred miles along the same geological direction through Polk County and then on into Louisiana and Mississippi. It has provided work directly or indirectly to thousands of men in leasing, drilling and allied activities besides starting a stream of royalty money into the hands of landowners.

Philosophy of Life Unchanged

G. W. Strake, who less than two years ago was engaged in a frenzied effort to raise enough money to start a wildcat well with assurance of being able to complete it, is classified today as a well-to-do man. It does not require either imagination or expertness with figures to recognize that on top of what he received through sale of leases after bringing in the discovery well, other rapidly growing sources of income since then have made big additions to his personal fortune. But it has wrought no fundamental change in the man's manner of living and no change at all in his philosophy of life.

A large income carries with it large responsibilities and the burdens of administration—that is, if the owner of the income looks upon life as a serious bit of business and not as a week-end frolic. One very obvious change observed by friends of Mr. Strake lies in the fact that he works harder now than he ever did before.

It already has been told how when his efforts to get financial help in putting down a test well in the Conroe area proved fruitless Mr. Strake determined in his extremity to put one down himself and "trust to God that his money would hold out." Now that is to be taken literally, for George Strake is distinctly a religious man. Not religious in any narrow, sectarian way, though he is active in a church of his own communion, the Catholic; but religious more particularly in the sense that he regards a human life as something committed to the watch and ward of the individual, to be ordered and developed under the guidance of Providence. The idea of stewardship is strong within him. He is just as sure that a divine plan lies back of each life and that it is the chief business of each man and each woman to aid in the fulfilment of that plan as he is that you can't drill a 5,000-foot well with a post-hole digger.

Skeptical About Genius

He is skeptical about the quality commonly referred to as genius. "We're not so all-fired smart," he grinned. "Use of such talents as nature gave you, keeping a worthy objective in mind, refusal to let discouragements down you, a cheering word now and then from your friends, unshakable perseverence in a program once decided upon and faith that the Hand that rules the universe will help you—well, I have an idea that's about all there is to genius and to achieving success."

It goes without saying that Mr. Strake has given much to philanthropic objects since his fortunes underwent so marked a transformation, but those who receive contributions say they are made with the stipulation that his name shall not be mentioned. His left hand has difficulty in finding out what the right one is up to.

He likes outdoor recreation, but gets little of it.

"When are you going to come out and play a round of golf?"

"Well, not just yet. I'm pretty well tied up."

And he has a sense of humor, as is evidenced by the way he conferred upon his youngest daughter, born two weeks after his discovery well was brought in, a name which would commemorate the big gasser with which he opened the Conroe Field. Her name is Georganna Alice Strake. Note what the initials spell.

World's Fair Will Have Great Petroleum Exhibit

(Continued from Page 14)

feet and both are animated under their own power—all equipment in these huge miniatures is exactly to scale.

One may watch miniature tools drilling underground, by means of cut-outs, in a sub-surface exhibit 20 feet long and 15 feet high. Another exhibit will show water introduced under pressure into the oil sands of apparently depleted fields, and how it drives additional oil to designated wells from which it is pumped to the surface.

An especially interesting technical exhibit will deal with the application of geophysical instruments to the problems of the geologist.

A pumping oil field with central power plants in operation will show both the surface and sub-surface. The interwoven nature of rail, water and pipe line transportation is demonstrated in a beautiful model of a typical terminal. Facilities include a 9½-foot model ocean tanker, docks, warehouses, loading racks with locomotive and tank cars, trucks, pumping station, storage tanks and auxiliary structures. A number of subjects which were more adapted to pictorial presentation, such as petroleum geography, history, unusual oil scenes, and "high-spot" statistics are presented as transparencies or "plane" exhibits.

The committee is deeply appreciative of the co-operation it has received from the industry as a whole, in the preparation of this story of oil.

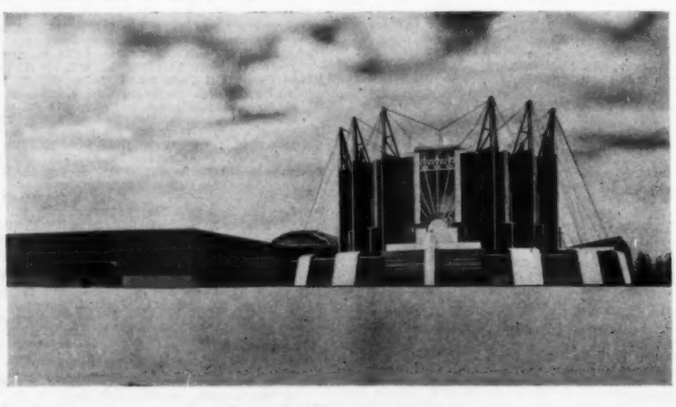
Committee on execution of exhibit plans is composed of: L. S. Wescoat, vice-president, Pure Oil Company, chairman; Dr. R. E. Humphreys, vice-president, Standard Oil Company (Indiana); Dr. Max G. Paulus, vice-president, Standard Oil Company (Indiana); E. C. Herthel, assistant vice-president in charge of development, Sinclair Refining Company; Theron Wasson, chief geologist, Pure Oil Company.

40 Different Subjects Covered

The completeness of the petroleum industry's show may be seen by a study of the following list of 40 separate exhibits:

1. Diorama of modern producing oil field and sub-surface.
2. Diorama of oil seepage.
3. Oil seepage and mud-volcano transparencies.
4. Symmetrical dome model.
5. Asymmetrical anticline model.
6. Salt dome model.
7. Oklahoma City oil field model and transparencies.
8. Turner Valley (complexly faulted and folded structure) diorama.
9. Display of rock specimens.
10. Transparencies showing origin, accumulation and migration of oil.
11. Exhibit showing relationship between oil, water and gas.
12. Movement of oil, water and gas in bed rock.
13. Model showing simple types of oil field structure.
14. Instruments used for surface geological surveying.
15. Aerial photography applied to geological mapping.
16. Stereoscope for vertical aerial photographs.
17. Geophysical exhibits—charts and elaborations.
18. Geophysical instruments display.
19. Diamond drilling.
20. Model of cable-tool rig and derrick.
21. Full size standard tools and equipment.
22. Model rotary drilling rig.
23. Full size rotary tools and equipment.
24. Wall model showing sub-surface drilling with, and fishing for rotary and cable tools.
25. Crooked hole model.
26. Crooked hole surveying devices and equipment.
27. Model showing causes of crooked holes.
28. Model showing cementing process with miniature cementing equipment.
29. Exhibit on role played by explosives in oil fields, with transparencies.
30. Sub-surface geological work displays: cores, cuttings and fossils.
31. Full size christmas tree and accessories with miniature model of separator and christmas tree hook-up.
32. Partially depleted or pumping oil pool model.
33. Model showing recovery of oil by water flooding.
34. Exhibit of sand-cut gate valve with explanatory transparencies.
35. Miniature operating refinery constructed of glass showing processes as they occur. (Supplemented with diorama of modern refinery and one of an oil field.)
36. Operating gasoline testing engine.
37. Terminus of pipe line, rail and tankers.
38. Transparencies on history of petroleum transportation.
39. Transparent maps on geography of petroleum.
40. Transparencies of spectacular or unusual oil field scenes.

The chemical (refining) exhibit was prepared under the direction of William B. Plummer (The Standard Oil Company, Indiana) and the geological, production and other exhibits under the direction of Dr. Theodore A. Link (Imperial Oil Company, Ltd.)



Travel and Transport Building

West Texas Fields

(Contineud from Page 40)

Roanoke Development Co.'s No. 1 Lee Litsey, temporarily abandoned, 347 feet.

Coleman County

Green and Ice's No. 1 Henderson, dry and abandoned, total depth 1,714 feet.

Eastland County

Texas Pacific Coal and Oil Co.'s No. 2 C. E. Allen, dry and abandoned, total depth 3,015 feet. No. 13 Fee, shot 90 quarts 3,005-45 feet, initial production 40 bbls., total depth 3,060 feet. Clements and Urban's No. 1 W. L. Boggs, dry and abandoned, total depth, 1,372 feet. Hickok Co.'s No. 1 Eppler, shot 90 quarts 3,470-3,500 feet, initial production 10 bbls., total depth 3,510 feet.

Palo Pinto County

Brazos River Oil and Gas Co.'s No. 5 J. H. Webster, dry and abandoned, total depth 2,400 feet.

Stephens County

Red Eagle Oil and Refining Co.'s No. 4 Lee, temporarily abandoned, total depth 3,782 feet.

Throckmorton County

Douglas and others' No. 1 Mrs. Stevens, dry and abandoned, 649 feet. Tex Central Oil Co.'s No. 1 Reynolds, dry and abandoned, total depth 1,092 feet. Walker and others' No. 4-A Cox, dry and abandoned, total depth 650 feet.

COMPLETIONS IN WEST TEXAS

Howard County

Plymouth Oil Company's No. 8 Kloh and others, top pay 2,274 feet, initial production 65 bbls. per day pumping, total depth 2,821 feet (old well recompleted).

Pecos County

Black Doran and McGee's No. 2 Pecos Valley, top pay 1,558 feet, initial production 50 bbls. per day, total depth 1,590 feet.

COMPLETIONS IN PANHANDLE

Gray County

Cantone Oil Co.'s No. 2 Morse, location abandoned.

Parton and Holt's No. 4 Morse, pay 2,449-61-2,572-75 feet, initial production 7 bbls. on pump and 5,000,000 feet of gas, total depth 2,804 feet, plugged back to 2,630 feet.

Sun Oil Co.'s No. 1 Combs and Worley, pay 3,010-15 feet, and 3,040-50 feet, initial production 854 bbls., total depth 3,050 feet.

The Texas Company's No. 8 Cook-Faulkner, pay 2,961-64 feet, initial production 200 bbls. on pump, total depth 2,963 feet.

Wheeler County

Osborne and others' No. 2 Glass and Odmore, gas 2,152-60 feet, initial production 1,000,000 feet of gas, total depth 2,167 feet.

Performance of Car Is More Dependent Upon Volatility of Fuel Than Generally Realized

By GEORGE GRANGER BROWN
University of Michigan*

Differences in performance, or response to the throttle, actually obtained from a car on the road are dependent upon the volatility characteristics of the fuels used. The importance of volatility is generally appreciated only in a qualitative manner. Lacking any definite quantitative significance, volatility does not have its full significance in the mind of the consumer.

Knock rating or antiknock value, although a more recent factor in determining the quality of motor fuel, has now been given a definite quantitative significance in the "octane number." Possessing a quantitative significance expressed as a simple number, knock rating has assumed its maximum significance in the mind of the consumer.

Methods for reporting the quantitative significance of volatility are relatively no further developed than were the methods for expressing knock rating in the dark ages of 1920 before the use of the benzol value scale was introduced.

To discover the importance of an accurate, simple quantitative means for expressing the value of any property of motor fuel, one has only to consult the quotations for motor fuels as published in the trade journals. The quotations given under two main classifications are stated in bold face type as "U. S. Motor Gasoline Below 65 Octane Number" and as "Motor Gasoline 65 Octane Number and Above." "Export Shipments" is the only group quoted on the basis of volatility and then only as to gravity and endpoint, which are entirely inadequate as indications of effective volatility.

Clearly some simple accurate numerical statement of effective volatility is urgently needed if volatility is to assume again its true significance in the mind of the consumer.

Volatility Index

Recently such a volatility index has been suggested[2] and used to indicate the effective volatility of motor fuels. The suggestion of such a single numerical value to express the effective volatility of motor fuel is a most important step in enabling the average consumer to form a more definite idea as to the service value of motor fuel. Unless there be available some such numerical value which can be given to motor fuel volatility it will always remain impossible for the average consumer to grasp the true importance of volatility.

Whether or not the volatility index defined by Oberfell and Alden[2] as the difference between 284 and the 50 per cent point on the A.S.T.M. distillation curve, will prove to be the most satisfactory method for evaluating the volatility of a motor fuel remains to be seen. In any case it is a long step in the right direction and provides a definite numerical relationship for the volatility of motor fuel which may be used as a manufacturing control point, as well as a sales point. With a single number to indicate the volatility of a fuel, it is possible to emphasize the importance of a high volatility index so that the significance of this number can be readily appreciated by the average consumer.

Motor Fuel Performance

Although the data necessary to determine motor fuel performance from its A.S.T.M. distillation have been available for some time[3] interpretation has required rather careful study and has been impossible to the average consumer. The following treatment of these data make it possible to read directly the relative performance obtained at any atmospheric temperature by the use of any fuel, simply by plotting the A.S.T.M. distillation curve of the fuel on the proper figure.

In the work done for the Natural Gasoline Association on the volatility of motor fuel it was found that the acceleration of a motor car could be definitely related to the mixture ratio, or the proportion of air to gasoline, burned in the cylinders during the accelerating period. Although there were slight differences in the acceleration obtained on different engines and even on the same engine with different adjustments, it was usually found impossible to increase the speed of the engine when the proportion of air to gasoline burned in the cylinders exceeded 20 pounds of air to 1 pound of fuel. For this reason the zero performance which represents zero acceleration is obtained when an air-fuel ratio of 20 pounds of air to 1 pound of fuel is burned in the cylinder.

The maximum possible acceleration is usually obtained when a mixture ratio of 12 pounds of air to 1 pound of fuel is burned in the cylinders during the acceleration period. For this reason 100 per cent performance, representing the maximum possible acceleration, is obtained with an air-fuel ratio of 12 to 1 in the cylinders.

The intermediate performances as indicated in Table 1, were obtained as the quotient of the acceleration, defined as increase in speed in unit time (about 10 seconds), obtained by the indicated air-fuel ratio; by the maximum acceleration, as obtained with an effective air-fuel ratio of 12 to 1.

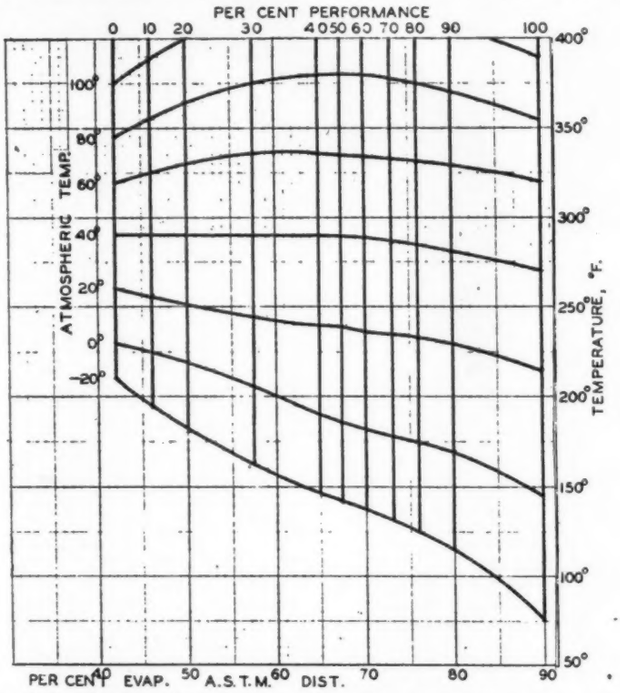


Figure 1—Motor without accelerating device thoroughly warm. Mixture temperature 90° F. above atmospheric

TABLE 1—PERFORMANCE AS DETERMINED BY THE AIR-FUEL RATIO BURNED WITHIN THE CYLINDERS

Performance (per cent)	Effective air-fuel ratio
0	20
10	19.8
20	19.4
30	18.9
40	18.4
50	17.8
60	17.1
70	16.3
80	15.4
90	14.3
100	12

The effective air-fuel ratio as burned in the cylinders of a motor car is determined by the air-fuel ratio supplied by the carburetor and the effective volatility of the fuel[3]. These variables were very carefully investigated in the work on Motor Fuel Volatility conducted for the Natural Gasoline Association and methods were given by which the effective volatility at any mixture temperature and air-fuel ratio could be determined from the A.S.T.M. distillation curve of the fuel[3].

By combining these data with the data of Table 1 as has been done in Figures 1, 2 and 3 the per cent performance of any fuel at any operating condition may be read directly by plotting the A.S.T.M. distillation curve on the appropriate chart. By referring to Figure 2, for example, U. S. Motor Gasoline would give 100 per cent performance at an atmospheric temperature of 100° F. but only about 50 per cent performance, or one-half the acceleration at an atmospheric temperature of 25° F., while at a temperature of 0° F. it would give practically no acceleration or zero performance.

Figure 1 was prepared for motors whose carburetors do not include adequate accelerating devices and which are not equipped with radiator shutters, so that there is little or no enrichment of the mixture when the throttle is suddenly opened and the mixture temperature is approximately 90° F. above atmospheric temperature when the motor is warm. Most modern cars are equipped with special accelerating devices and will give better performance than would be indicated by Figure 1. But there are many cars on the road which operate under these conditions, and Figure 1 is included for the sake of completeness. It is based upon a carburetor adjusted for maximum power or an air-fuel ratio of 12 to 1.

Figure 2 was prepared for representative modern cars which operate at higher mixture temperatures in cold weather than those for which Figure 1 was prepared. Furthermore, modern carburetors are equipped with accelerating devices which inject an additional quantity of gasoline into the manifold whenever the throttle is suddenly opened. This is equivalent to enriching the mixture during the accelerating period. Recent tests[4] indicate that an air-fuel ratio of 12 to 1 is enriched to about 7 to 1 by the accelerating device in some cars. Experience indicates that an enrichment in air-fuel ratio from about 12 to 9 upon acceleration is generally representative of modern cars, and has been used in preparing Figures 2 and 3 for modern motors.

Figure 3 is a similar chart prepared for modern motors immediately after they are started from cold. It is obviously impossible to account for individual variations in adjustments and conditions of different cars in a set of charts such as these. But on the average they correctly indicate the relative performance that will be obtained under the indicated

*Presented before convention of Natural Gasoline Association of America, in Tulsa, May 15-17.

[2] G. G. Oberfell and R. C. Alden, "Suggest Volatility Index," The Oil and Gas Journal, Vol. 31, No. 35, p. 14, January 19, 1933.

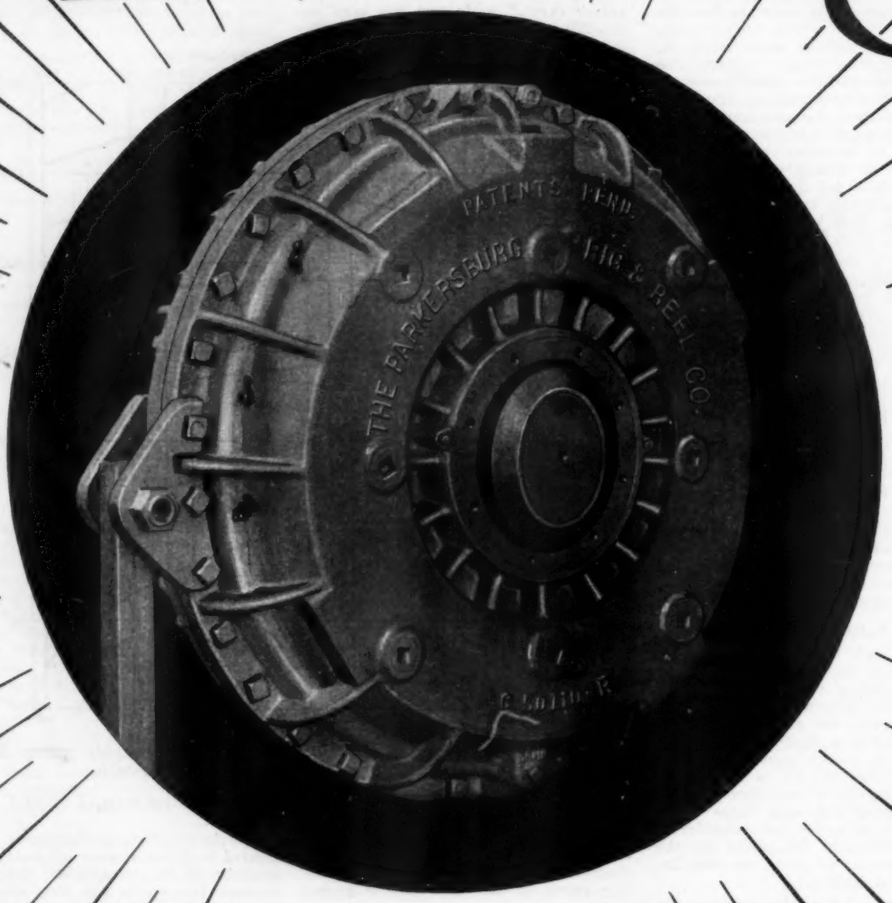
[3] "The Volatility of Motor Fuel," Engineering Research Bulletin No. 14, University of Michigan, May, 1930.

[4] Hanley and Paul, National Petroleum News, 25, No. 18, p. 36 (May 3, 1933).

TABLE 2—THE EFFECT OF VOLATILITY INDEX ON PERFORMANCE

Volatility index	Performance: Inadequate accelerating device—no radiator shutters; Warm motor (Figure 1) —20°	0°	20°	40°	60°	80°	100°	Adequate accelerating device, radiator shutters, etc.; Warm motor (Figure 2) —20°	0°	20°	40°	80°	Cold motor (Figure 3) 40°	60°	80°	100°F.
100	20%	32%	60%	91%	100%	+	+	60%	85%	100%	....	....	25%	45%	60%	85%
80	10	25	39	83	100	+	+	50	72	94	100%	....	0	30	50	73
60	3	20	30	70	95	100	+	45	63	89	96	....	—	0	43	63
40	0	5	23	50	91	100	+	30	53	78	90	100	—	0	30	52
20	—	0	10	33	85	98	100	0	30	62	81	100	—	—	0	33
0	—	—	0	22	60	94	100	—	0	45	62	95	—	—	—	0

Announcing



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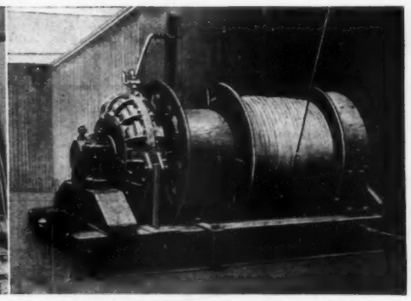
Motion Pictures of the Hydromatic Brake in Demonstration Test: stopping 50 Ton Load dropping from derrick top 90 ft. in 14 seconds
50 Ton Load on way to Derrick Top
Test load dropping 90 ft. in 14 sec.
Load stopped with little effort
Perfect Control! Note Watch under load
Glass of Water and Egg balanced for rate
Smooth Performance No Jar to Egg or Water
No "Romping" on this Brake

The Hydromatic Brake on Rotary Draw Works at Iowa, Louisiana



The Hydromatic Brake on a Sand Reel Installation in West Texas

RIG AND REEL Co.
WEST VIRGINIA

conditions when the carburetor is properly adjusted for maximum power under normal operating conditions.

Although very useful in the manner described these charts are too complicated to have much significance for the average consumer but may be considered as the basis for interpreting, and determining the practical value of a volatility index.

Volatility Index and Performance

Although fuels of the same 50 per cent point may differ by as much as 40° at the 70 per cent point or 70° at the 90 per cent point, the differences in the 10 and 30 per cent points are usually much less[3]. It will be observed that the differences in the performance are much less sensitive to changes at the 70 or 90 per cent point of the A.S.T.M. distillation than the changes in the 30 to 50 per cent range. For this reason the volatility index of Oberfell and Alden[3] based upon

TABLE 3—THE EFFECT OF KNOCK RATING ON PERFORMANCE

Octane number	Performance: Spark adjusted for maximum acceleration — 78 Octane necessary for — No audible knock	Max. power with audible knock	Spark constant — 78 Octane necessary for — No audible knock	Max. power with audible knock
78	100%	100%	100%	100%
66	99	94	98	90
57	96	90	92	75

determines the performance of motor fuel in a motor. The importance of knock rating, or antiknock value, as expressed in terms of octane number is generally appreciated and needs no emphasis here. Aside from the objectionable noise and possible damage to the engine caused by detonation, there is a loss in power or torque and accompanying loss in performance if a fuel of inadequate knock rating is used.

Acceleration is directly proportional to torque developed by the engine, and a loss in torque caused by detonation may be converted directly into a proportion-

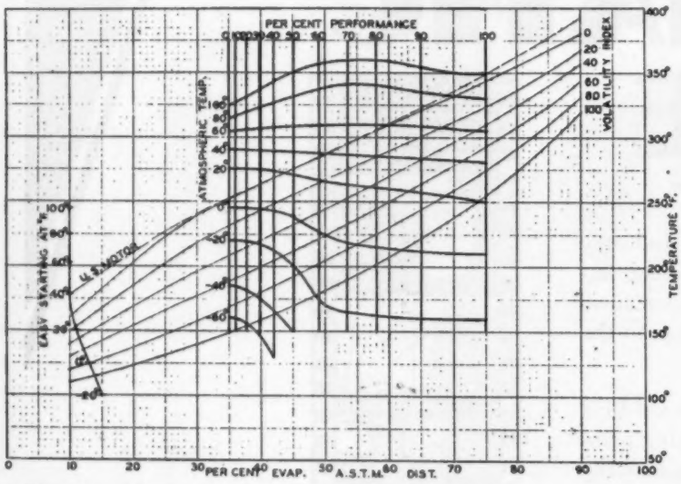


Figure 2—Motor operating with accelerating device thoroughly warm

the 50 per cent point of the A.S.T.M. distillation may be used as a fair indication of the entire A.S.T.M. distillation curve for purposes of determining performance without introducing serious error in most cases.

Table 2 indicates the per cent performance based on the volatility index of Oberfell and Alden using average values for the 10, 30, 70, and 90 per cent points of motor fuels as determined from their 50 per cent points[3].

Effort to eliminate the possible errors that might be included in the use of this volatility index because of differences in the distillation characteristics of different gasolines having the same 50 per cent point, indicate that further complications such as taking the average boiling point, or the average of the 10, 30, 50, 70, and 90 points are not justified. It should be remembered that motor fuels are not bought or sold exclusively on the basis of a single characterization and that motor fuels of freak A.S.T.M. distillation characteristics will be eliminated on the basis of other considerations than volatility index. For this reason, it is not necessary to include in the index factors to prevent the use of unsatisfactory blends of extremely high 90 per cent points, high 10 per cent points which will prevent satisfactory starting, or on the other hand, extremely low 90 per cent points which may give loss in power under certain conditions, or extremely low 10 per cent points which may give high vapor pressure and difficulty due to vapor lock. The importance of these other factors are understood in the industry and need not be included in the volatility index any more than they are included in the octane number.

The volatility index appears to be a reasonably accurate, satisfactory and simple means for expressing the effective volatility of a motor fuel in so far as its general performance in motor cars is concerned.

Volatility is not the only factor which ate loss in acceleration or performance as defined above.

It is extremely difficult to select a commercial engine and a set of operating conditions which require exactly 78 octane number to just eliminate the audible knock during acceleration. But with a variable compression test engine conditions can be chosen so that a fuel of 78 octane number is required to eliminate audible knock, and the loss in torque can be readily determined as the octane number of the fuel is decreased from 78. By such measurements of torque with all other conditions under absolute control, complicating effects of fuel volatility and distribution in multi-cylinder engines are avoided.

Many tests of this nature have been run in the past on the N.A.C.A. Universal test engine, some of which have been reported[5,6].

In Table 3 the decrease in torque observed in tests conducted on this single-cylinder variable compression motor have been converted into relative performance as a function of octane number of the fuel. These tests were made under the different conditions as indicated in Table 3.

When the spark is adjusted for maximum torque for each fuel tested, there is less difference between fuels of different octane number than when the spark is properly adjusted for the fuel of highest octane number and held constant throughout the series of tests. In order that the data may be complete Table 3 includes the results obtained when the spark was properly adjusted for maximum torque in each case and also when the spark was held constant for all fuels.

The data reported in columns 2 and 4 represent test conditions selected so that the use of the fuel of 78 octane number just eliminated the audible knock when spark was set for maximum power. The data reported in columns 3 and 5 were obtained under higher compression ratios with conditions set for maximum power with the use of a 78 octane fuel, without regard to audible knock which was rather severe in each case.

In commercial operation the compression ratio of the motor and the spark timing would be so chosen that a fuel of 78 octane number would give only a slight if any audible knock. Furthermore, most modern cars are equipped with automatic spark control so that it is inconvenient for the operator to adjust the spark according to the knock rating of the fuel in use. Under such conditions the data reported in the fourth column would be indicative of the loss

[5]G. G. Brown, "Determination of Detonation Ratings," The Oil and Gas Journal, February 28, 1929.

[6]H. E. Zuck, Engineering Research Circular No. 6, Department of Engineering Research, University of Michigan, Ann Arbor, March.

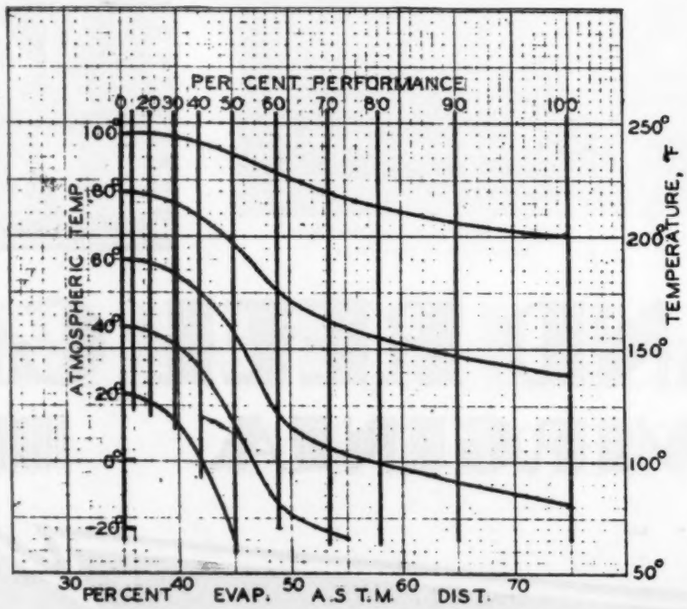


Figure 3—Motor operating with accelerating device cold

in performance, or acceleration, that would be caused by the use of a fuel of such low octane number that it would detonate audibly and continuously during the accelerating period.

For example, under these conditions, if a motor fuel of 78 octane number was required to eliminate audible knock during acceleration, the use of a fuel of 66 octane number under exactly the same conditions both as to engine and fuel volatility, would cause a loss in performance of 2 per cent, or about the same loss in performance as would be experienced if the volatility index was reduced by about 10 numbers. If a fuel of 57 octane number were used under the same conditions, the loss in performance would be about 8 per cent or about the same as would be experienced by the use of the fuel with a volatility index of about 30 units less.

These data would indicate that a change in volatility index of 10 units has approximately the same effect on performance, or acceleration as a difference of 10 units in octane number. Obviously if 100 per cent performance, perfect acceleration, is obtained with two fuels of different volatility index or of different octane number, these differences are without significance, but in the critical range where performance suffers by the use of a lower volatility index, or lower octane nubmer, these two properties seem to be of approximately equal numerical importance.

Liquefied Gas Industry Awaits New Developments

By T. W. LEGATSKI
Phillips Petroleum Co.*

The duties of the Liquefied Petroleum Gas Committee for the year 1932 have been rather light since most of the intensive and time consuming work was carried to successful completion during the preceding year. The results of this completed work, which consisted of drawing up, for the industry, suitable tentative products specifications and standardized test procedures, were thoroughly covered in a paper and a discussion at the 1931 meeting of this association. It fell to the lot of the present committee to carry on after the completion of several years of intensive study. Nothing was left for it to do but await developments after the adoption of the tentative specifications.

To our knowledge few, if any, valid criticisms have been raised against the specifications as tentatively adopted. It will be one of the duties of the incoming 1933 committee to catalog such suggestions as have been made and to prepare a revision of both the specifications and the test procedures so that same may eventually be advanced to standard.

The specifications seem to have stood the test of commercial practice fairly well. However more experience is necessary before final judgment can be reached as to their correctness. In the meantime, due consideration will necessarily have to be given to the corresponding refinery light fractions which are making their appearance as competitive products. It will be one of the duties of the incoming 1933 committee to study the characteristics of these competitive products and also the existing tentative specifications to determine whether further revisions are necessary. This work should also include a study of the various test procedures now in vogue. Particular attention is called to the necessity for a standard method of determining sulphur content and the corrosiveness of such products. Considerable work along these lines has already been done in the individual laboratories of the member companies.

Your committee has continued to direct its efforts to the as yet unsolved problem of locating a suitable warning agent for these gases. Several months ago, an arrangement was consummated whereby the U. S. Bureau of Mines and the Mellon Institute of Industrial Re-

(Continued on Page 100)

*Report of Liquefied Petroleum Gas Committee before Convention of Natural Gasoline Association in Tulsa May 15-17.

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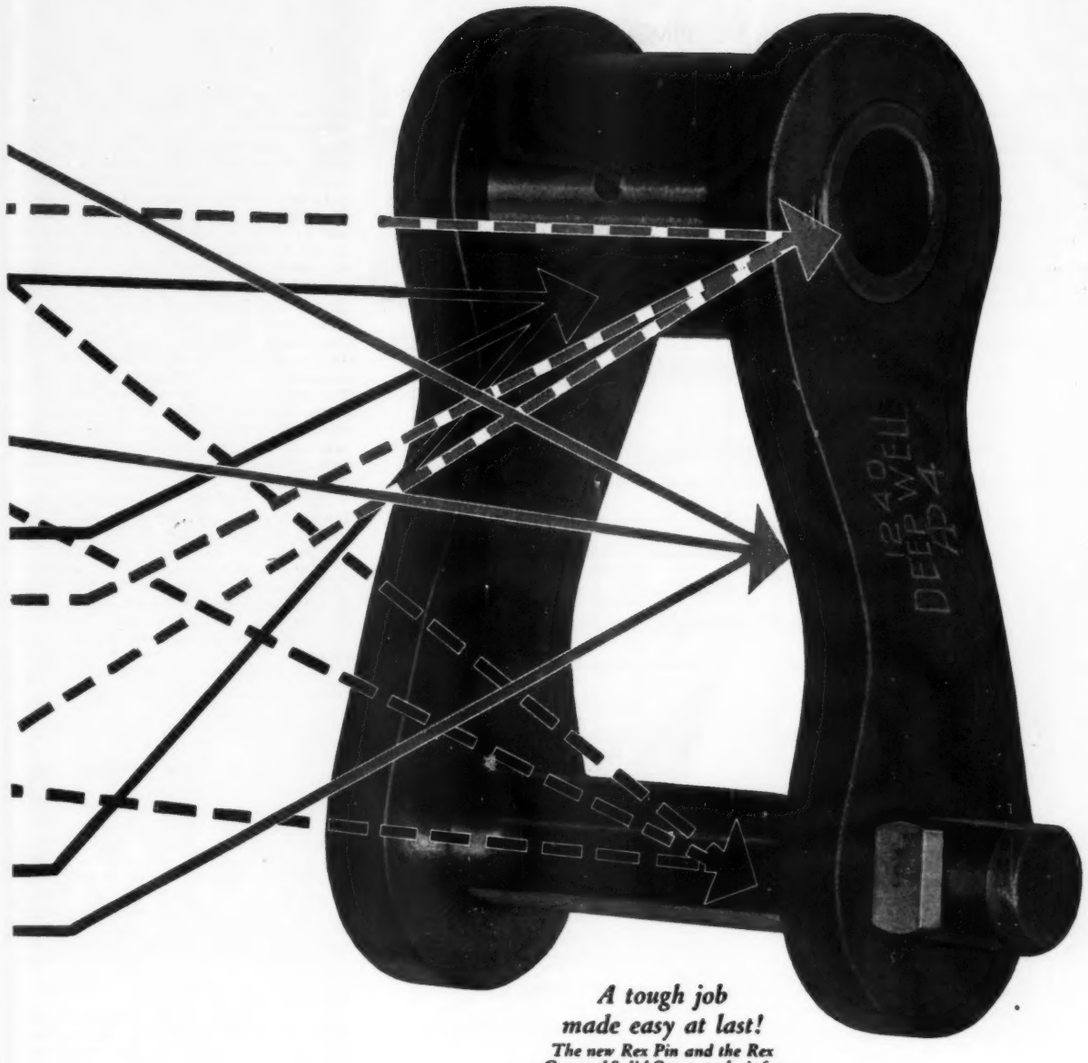

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Comparison of Knocking Characteristics of Vapor Recovery and Natural Gasolines in Blends

By H. M. TRIMBLE
Phillips Petroleum Co.*

For a paper on as broad a subject as this, it has been in preparation only a short time. The investigation was started February 21, 1933, which allowed only 12 weeks for the entire study. Consequently there has been time to study only a few of the many variables involved. With apologies for the inadequacy of the relationships included, this paper is presented.

Natural and straightrun gasolines for many years had the motor fuel markets to themselves. Cracked gasoline appeared on the scene some time ago. Lately vapor recovery gasoline has elbowed its way into the picture as an ingredient of good motor fuel. These developments have been inevitably forced by the economic pressure to reduce by-product dominance of the motor fuel markets and by the demand for better antiknock characteristics in gasoline. An incidental advantage has been the improvement in volatility of motor fuels made possible by the greater flexibility of cracking processes.

Straightrun gasoline because of deficiencies in antiknock and volatility characteristics has had to yield to cracked gasoline through the medium of reforming and "once through" cracking processes except in the case of unusual crudes. The advent of "Q" gasoline will no doubt tend to throw the balance more in favor of straightrun gasoline. It is doubtful whether natural gasoline, confronted with competition from vapor recovery gasoline, must give up its niche in the motor fuel markets for the following reasons: (1) No matter how much improvement can be made in the volatility of refinery gasoline by cracking processes, natural gasoline can always add volatility to someone's commercial product, thus perpetuating the "volatility race," and (2) natural gasoline can be processed to make an ideal gasoline for consumption during nine months of the year.

Antiknock Characteristics

Nevertheless as a point of practical, present day considerations it seemed worth while to compare the antiknock characteristics of equivalent blends of natural and vapor recovery gasolines. For some time it has been evident from indirect data that vapor recovery gasoline had a higher octane number than natural gasoline of the same vapor pressure. It has also been observed that the new motor method for determining octane numbers improves the relative value of natural gasoline. Finally, there have been claims made for the superior responsiveness of natural gasoline and natural gasoline blends to additions of tetraethyl lead (Tel). For a limited number of the several varieties of gasoline, this paper attempts a quantitative appraisal of these factors.

Considerable work has been done on the antiknock characteristics of pure hydrocarbons. A number of references [3, 4, 5, 6, 8, 9, 12] of this nature are cited in the bibliography. Much of this work has been obscured by the multiplicity of testing methods, the wide variety of reference fuels and the necessity for studying the pure hydrocarbons in blends.

One recent article[4] is of particular interest in connection with the present study in as much as it deals with the knock ratings of Δ^2-olefines, undoubtedly present in cracked gasolines in important proportions. The conclusions of Messrs. Garner, Wilkinson and Nash in respect to the Δ^2-olefines are reproduced graphically in Figure 1, together with known data[4] pertaining to the saturated hydrocarbons. Although the antiknock testing methods employed are not identical some generalities may be ventured with Figure 1 as the basis. It is interesting to note that the Δ^2-olefines have considerably higher octane numbers at 212° F. than the normal saturated hydrocarbons of like boiling range but not much higher than the isomeric saturated hydrocarbons. As a matter of fact iso-octane (2, 2, 4 trimethylpentane), by definition, has an octane number considerably above the trend for Δ^2-olefines. It is noteworthy that the increase in jacket temperature had a pronounced effect on the octane numbers of the lighter Δ^2-olefines. Although actual data are not available there is much experience with blends to indicate that the octane numbers of the saturated hydrocarbons increase slightly, instead of decreasing drastically, under such conditions.

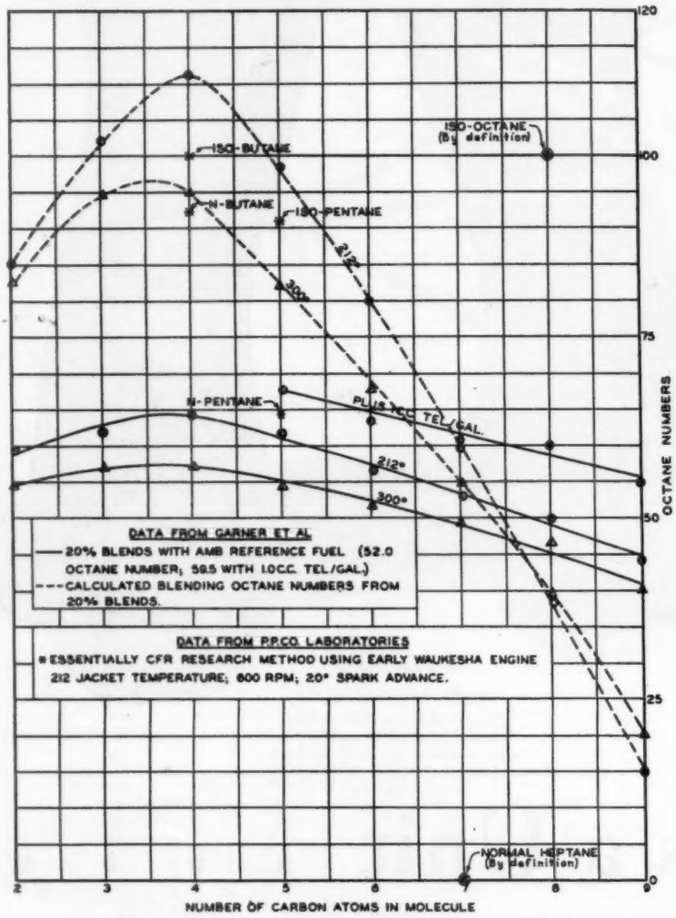

Figure 1—Octane numbers of pure hydrocarbons

In connection with the relationships portrayed in Figure 1 it is interesting to note the composition of the fractions of four or five carbon atoms of a sample of vapor recovery gasoline.

General Plan of Investigation

A.—General scheme. Due to the great number of variables in an investigation of this type it was deemed advisable to eliminate as many of these as possible.

With this thought in mind the individual vapor recovery gasolines were reduced to practically a butane-free condition and composited. The light components removed were then added to this composite gasoline so that composite vapor recovery samples of approximately 14, 18, 22 and 26-pound vapor pressure were available for blending purposes.

A single representative natural gasoline was selected and also reduced to practically a butane-free condition. The light components were then added to this butane-free gasoline so that approximately 14, 18, 22 and 26-pound vapor pressure samples were available for blending purposes.

Three heavy gasolines were used. These were of low volatility to eliminate the effects of light materials which would otherwise have been present. Two of the heavy gasolines were derived from marginal ethyl base stocks while the third was a straightrun gasoline with excellent antiknock characteristics. Unfortunately the samples of ethyl base gasolines were not as good in antiknock characteristics as we would have liked to study but it was necessary to use them.

TABLE 1—COMPOSITION OF FOUR AND FIVE CARBON ATOM FRACTIONS OF VAPOR RECOVERY GASOLINE

Butane-Butene Fraction	Per cent by volume
Iso-butane	11.4
n-butane	49.0
Iso-butene	10.1
1-butene	10.4
2-butene (low boiling)	11.6
2-butene (high boiling)	6.6
Butadiene	0.9

Pentane-Pentene Fraction	Per cent by volume
Pentanes	60
1-pentene	9
2-pentene	17
Branched chain olefines	14

Pentanes about two-thirds n-pentane.

In order to remove the vapor pressure of the final blend as a factor, all blends were made to constant vapor pressure. The vapor pressure chosen was 11 to 11½ pounds by the Reid method as this approximates the average refinery gasoline specified for use the year around.

The blending components and procedure adopted result in the use of large percentages of light gasoline but relative results should persist for smaller percentages.

B.—Test methods. In regard to the testing methods employed in this work, it was decided to use standard methods as closely as possible.

The composition analyses determined were made by low temperature fractional distillation [10, 12], all constituents having the same number of carbon atoms in the molecule being collected as one fraction.

The butanes-butylenes fraction was collected and measured as a gas and the butylenes content of this fraction determined by absorption in 90 per cent sulphuric acid.

New Procedure Necessary

To determine pentenes and hexenes in their respective fractions a somewhat different procedure was necessary. The whole five or six carbon atom fraction was condensed in a small bulb, sealed off and weighed. The tip of the bulb was then cut off and the unsaturated compounds were brominated, while the sample was chilled in a carbon dioxide-gasoline bath. After warming to room temperature the sample was again weighed and the percentage of unsaturated calculated from the bromine absorbed.

In determining liquid volume of the five carbon atom fraction the average density of the most common compound was calculated, using values given in International critical Tables. For the hexane fraction a small density pipette was used.

The Reid vapor pressures were run in accordance with A.S.T.M. method D 323-32T except that all samples were poured at 32° to 36° F. In general, this pouring procedure results in vapor pressures about a half pound higher than would be obtained by sampling by immersion. The gravities were determined as required by D 287-32T except that thermo-hydrometers graduated in 0.2° A.P.I. instead of 0.1° A.P.I. were used.

D 86-30 method was used in all Engler distillations on samples of less than 15 pounds Reid vapor pressure while D 216-32 was used on those over this vapor pressure.

In making the A.S.T.M. octane number determinations, A.S.T.M. method D 357-33T was followed. The C.F.R. research and Ethyl corporation Series 30 ethyl base methods were standard in minor details.†

In determining the octane numbers of

*Before convention of Natural Gasoline Association of America in Tulsa, May 15-17.

†The research method used did not employ the use of the shrouded intake valve, the air to the carburetor was maintained at the constant temperature of 100° F., the old type water condenser was used and the water pump for circulating the cooling medium. The air to carburetor in the Ethyl corporation ethyl base method is maintained at a temperature of 100° F.

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the higher vapor pressure samples, the test fuels were conducted under water pressure in chilled lines to the fuel passageway of the carburetor. This procedure prevents the escape of the light vapors of the sample as it employs an entirely closed system for the fuel.

Two types of gum tests were used in this work, one was Method A[3] of the subcommittee of D-2 on gum and the other the accelerated oxidation test of the Standard Oil Development Co.[14]

Extra precaution was taken in handling the samples to prevent change in the composition. Whenever it was necessary to pour a sample it was previously cooled to 60° F. or less, depending on the test to be made.

The Light Gasolines

Through the kind co-operation of the Barnsdall corporation, Continental Oil Co., Pure Oil Co., Shell Petroleum Corp. and Skelly Oil Co., it has been possible to present data on a composite vapor recovery gasoline, which should be fairly representative of such material in this refining area. Thus, including the product from our own refinery, the composite vapor recovery gasoline was obtained from six refineries. Empire Oil Co. was unable to supply a sample due to plant difficulties and a second sample from Shell Petroleum Corp. arrived too late for inclusion in these tests.

The characteristics of the several vapor recovery gasolines as received are shown in Table 2.

It is to be noted that these gasolines range in Reid vapor pressure from 12.5 to 30.3 pounds and their A.P.I. gravities vary from about 74 to 91 degrees. The A.S.T.M. octane numbers range from 71 to 82 and the C.F.R. research octane numbers from about 76 to 89.

It is quite certain that these gasolines contain other than cracking still vapors. The composition analysis enables a comparison in this respect. On inspection of these analyses it is found the "-enes" constitute from 43 to 62 per cent of the components with less than seven carbon atoms. The gasoline from refinery one had the greatest percentage and the one from refinery five had the lowest.

Each of the original vapor recovery gasolines was fractionated separately to a butane-free condition. The overhead butane fractions were taken off in 10-pound cuts from the original volumes of vapor recovery gasoline (35 to 40 gallons). The first cuts from each vapor recovery gasoline were put in a common container, the second cuts of each in another common container and so on. In all, five such containers were used. In case the vapor recovery gasoline contained more than 50 pounds of butane, all of the excess butane was placed in the last container.

Although the experimental columns used permitted close fractionation it is believed the manner of collecting the four carbon atom fraction had a tendency to offset this advantage over usual plant fractionation.

The characteristics of the butane-free vapor recovery gasolines are given in Table 3.

TABLE 2—CHARACTERISTICS OF INDIVIDUAL VAPOR RECOVERY GASOLINES, AS RECEIVED

A. Volatility Characteristics

SS No.	Refinery	R.V.P.	°A.P.I.	A.S.T.M. evaporated temp. (°F.) 10%	50%	90%	95%
13,425	1	20.85	83.0	78	116	180	199
13,426	2	20.05	84.6	70	102	195	239
13,427	3	18.90	83.9	79	113	192	218
13,429	4	25.05	82.0	78	118	193	216
13,654	5	30.30	91.4	...	84	165	196
13,686	6	12.50	73.9	106	153	249	274

B. Octane Numbers

Refinery	A.S.T.M.	C.F.R. research
1	77.4	83.9
2	77.1	82.2
3	75.9	80.1
4	78.7	82.9
5	81.4	88.8
6	71.0	75.9

C. Composition Analysis

Refinery	Propane and lighter	Butanes	Butenes	Pentanes	Pentenes	Hexanes	Hexenes	Heavier
1	.....	16.2	7.6	20.9	13.0	15.6	11.4	16.3
2	Trace	17.9	9.9	25.6	12.2	13.3	6.1	15.5
3	.....	14.9	5.5	23.8	15.1	14.5	8.9	17.3
4	.....	14.6	7.6	20.2	13.3	15.8	9.6	19.0
5	.. ..	33.6	10.1	21.9	8.6	10.4	6.2	9.2
6	.....	6.9	2.3	15.9	8.1	17.9	10.9	35.6

TABLE 3—CHARACTERISTICS OF THE INDIDIVUAL BUTANE FREE VAPOR RECOVERY GASOLINES

A. Volatility Characteristics

SS No.	Refinery	R.V.P.	°A.P.I.	A.S.T.M. evaporated temp. (°F.) 10%	50%	90%	95%
13,584	1	12.6	77.5	107	129	186	205
13,578	2	11.5	76.9	108	125	213	261
13,590	3	11.35	78.6	109	129	202	227
13,572	4	10.1	75.4	116	138	201	224
13,596	5	11.55	79.4	108	124	193	218
13,680	6	8.0	70.9	126	163	255	284

B. Octane Numbers

Refinery	A.S.T.M.	C.F.R. research	E.G.C. Ethyl base
1	73.2	78.8	80.5
2	67.7	70.9	74.0
3	69.5	75.4	77.1
4	71.8	76.9	78.2
5	70.5	73.8	75.8
6	68.4	73.4	74.4

C. TEL Requirements (cc./gal.)

Refinery	A.S.T.M. To C-6	A.S.T.M. To 80 octane No.	E.G.C. Ethyl base To 80 octane No.	E.G.C. Ethyl base To 85 octane No.
1	0.45	3.55	0.0	0.45
2	1.9	5.5	0.8	2.1
3	1.75	6.0	0.45	1.7
4	0.7	2.3	0.2	0.9
5	0.95	3.15	0.45	1.2
6	1.05	3.8	0.65	1.65

The range of the Reid vapor pressure of these samples has been reduced to from 8 to 12.6 pounds and the A.P.I. gravities from approximately 71 to 79.5 degrees. The A.S.T.M. octane numbers vary from 68 to 73, the research octane numbers from 71 to 79, and the Ethyl corporation ethyl base octane numbers from 74 to 81. The most significant thing about these octane numbers is that the highest A.S.T.M. octane number is lower than the lowest ethyl base octane number. The TEL requirements show the great severity on these gasolines when tested on the new A.S.T.M. method. For example, the situation of the butane-free gasoline of refinery one is cited. This gasoline required only a half of one cubic centimeter of TEL (tetraethyl lead) per gallon to equal 85 octane number by the old ethyl base method, but two and one-half cubic centimeters of TEL per gallon were necessary to equal only 80 octane number by the A.S.T.M. method. It also is interesting to note that the butane-free vapor recovery gasoline of refinery five had the best A.S.T.M. method TEL response with respect to its TEL response by the ethyl base method. The original of this gasoline, as you will recall, had the lowest unsaturate content in the fraction below heptane.

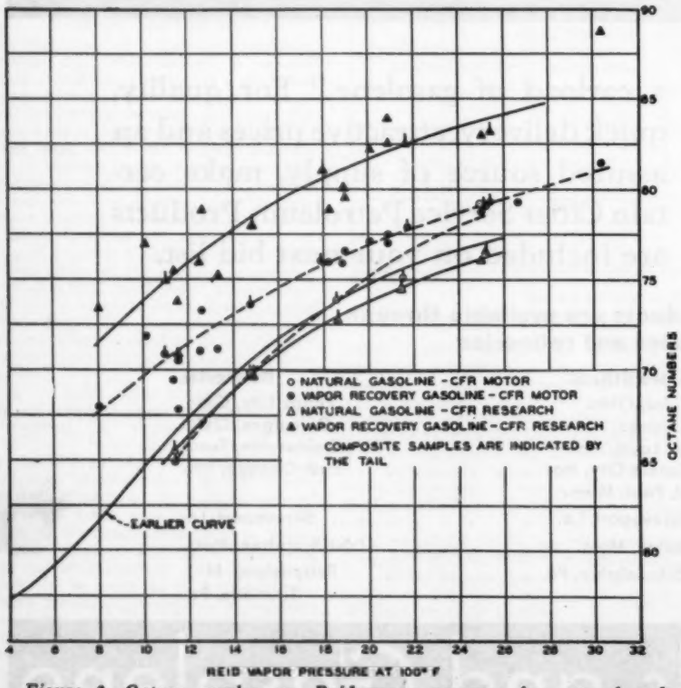

O NATURAL GASOLINE - CFR MOTOR
● VAPOR RECOVERY GASOLINE - CFR MOTOR
Δ NATURAL GASOLINE - CFR RESEARCH
▲ VAPOR RECOVERY GASOLINE - CFR RESEARCH
COMPOSITE SAMPLES ARE INDICATED BY THE TAIL
EARLIER CURVE
OCTANE NUMBERS
REID VAPOR PRESSURE AT 100° F

Figure 2—Octane number vs. Reid vapor pressure for natural and vapor recovery gasolines

Study Composites

The next step in the procedure was to composite equal amounts of the six butane-free vapor recovery gasolines. In preparing the composite 14, 18, 22 and 26-pound samples of vapor recovery gasoline the composite butane-free gasoline was blended with the fifth cut and part of the fourth cut of overhead product to make the 14-pound composite. A portion of the 14-pound composite was then blended with enough of the third overhead cut to give the 18-pound composite, this then with the second overhead cut to give the 22-pound sample and it in turn with the first overhead cut to give the 26-pound gasoline.

In Table 4 the characteristics of the composite vapor recovery samples are given. The vapor recovery gasoline samples shown in Table 4 were the ones used in the final blends. The change of characteristics of these samples is quite regular with the vapor pressure, gravity, octane number and butane-butene content increasing with increasing vapor pressure of the composite gasoline. The A.S.T.M. octane number on the average is about four and a half numbers lower than the C.F.R. research octane number.

A 26-70 natural gasoline representative of this grade and gasoline was selected for the making of the various vapor pressure samples of this type fuel. The several vapor pressure natural gasolines were made from this 26-70 gasoline by first fractionating it to a butane-free condition. The overhead cuts of butane were saved as eight consecutive equal weight fractions. To make the 14, 18, and 22-pound gasolines, the butane-free gasoline was blended with the overhead butane cuts with some overlapping of the latter to offset the superior fractionation obtained in the small columns as compared with normal plant fractionation.

The 26-pound natural gasoline was made by blending some of the first over-

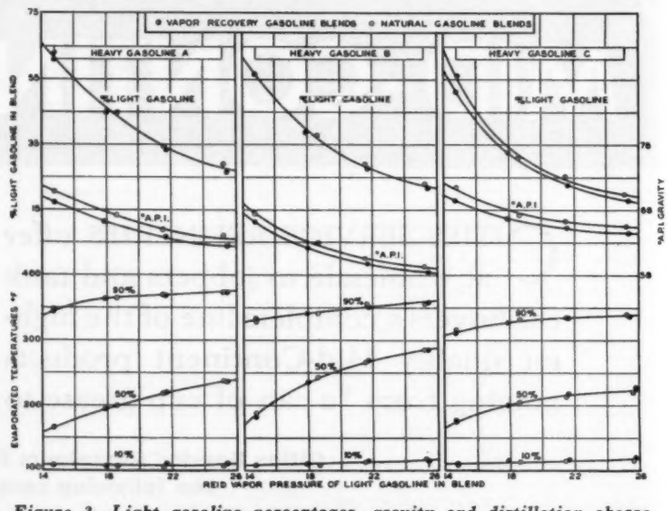


Figure 3—Light gasoline percentages, gravity and distillation characteristics of the blends

The change of characteristics of these samples is quite regular with the vapor pressure, gravity, octane number and butanes content increasing with increasing vapor pressure of the gasoline. The A.S.T.M. octane numbers are higher than the research ones for vapor pressures over 14 pounds, amounting to almost three octane numbers at the maximum. This exemplifies the so-called "appreciation" of octane numbers with the more rigorous knock testing methods.

A comparison of the octane numbers of the light gasolines used in this work has been made in Figure 2 on the basis

of their vapor pressures. Alden[1] presented a figure of this type about a year ago and the curve he presented has been superimposed on this figure for comparison. It will be noted that the research octane number curve on the present group of samples follows the trend of the old curve but at a lower level. The test method for the old curve deviates from the research method in that it uses a constant spark advance and a higher air to carburetor temperature. This figure clearly brings out the A.S.T.M. octane number appreciation of natural gasoline and its depreciation of vapor recovery gasoline.

The Heavy Gasolines

It was decided that the heavy gasolines should be limited to three. It was necessary on account of the limited time to make as good a guess as possible as to where to obtain them as it would be impossible to take time to select just the right gasoline. It was attempted to obtain a straightrun and a cracked gasoline with good TEL responses and another cracked gasoline with average or less TEL response. The three gasolines obtained have been designated A, B and C.

Heavy gasoline A as received had a fairly high vapor pressure and, therefore, was debutanized before being used. The removal of only a very small portion was necessary. This reduced the vapor pressure to about 3 pounds. This procedure unfortunately resulted in confusion on the samples of this gasoline and tests were made on a sample of approximately 50 per cent of the gasoline before debutanizing and 50 per cent of it after debutanizing. When a close study of the results was started this was discovered and a sample of the debutanized gasoline taken. None of the antiknock data on this latter sample has as yet been obtained. The following is an estimate of these characteristics of the debutanized sample:

OCTANE NUMBERS	
A.S.T.M.	53.5
C.F.R. research	52.9
E.G.C. Ethyl base	54.5

TEL REQUIREMENTS	
To 70 octane number (A.S.T.M.)	3.5
To C-6 (A.S.T.M.)	7.5
To 70 octane number (Ethyl base)	2.5
To 78 octane number (Ethyl base)	5.1

It can be readily seen that this gasoline is of low octane number and poor TEL response.

The heavy gasoline B as received was of low enough vapor pressure that it was not necessary to debutanize it. This gasoline did not come up to our expectations. It was hoped that it would have 60 to 65 octane number and a good TEL response but had an intermediate octane number and about average TEL response. It probably contains an appreciable amount of straightrun gasoline.

The vapor pressure of heavy gasoline C as received was low enough that it was not necessary to debutanize it. This is a straightrun gasoline of fairly high octane number and good TEL response. The data available on these heavy gasolines to date are presented in Table 6.

The low volatility of these gasolines should be noted. Both gasolines A and B do not meet government specifications for motor fuel at the 50 per cent point.

The A.S.T.M. method appreciates both the research and ethyl base octane numbers of the fuel C, while it appreciates only the research one for B fuel and depreciates both for A fuel.

The heavy gasoline C is the only one of the three to require less than 3 cc. of TEL to meet either the old or new ethyl standard of antiknock properties.

Blended Fuels

The objective of this work was to produce blends of each of the heavy gasolines with vapor recovery gasoline of different vapor pressures and with natural gasoline of different vapor pressures; said blends to have a constant enough vapor pressure so that this factor could be eliminated in the comparison of the vapor recovery and natural gasoline.

Table 7 gives the essential data on the volatility of the blends, the octane numbers are given in Table 8, the various TEL requirements are presented in Table 9, and the results of the gum test work in Table 10.

Discussion of Results

Figure 3 presents graphically the composition and volatility characteristics of the blends. In Figures 3, 4, 5 and 6 the abscissa is the Reid vapor pressure of the light gasoline, and the relationships shown are those determined for 11-pound blends of these light gasolines with the heavy gasoline designated.

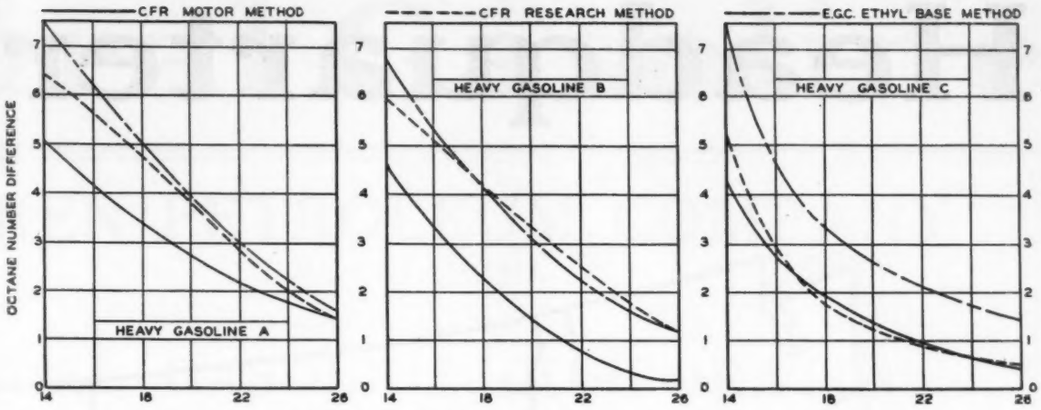


Figure 4—Octane number difference between vapor recovery blends and natural gasoline blends

The percentage of the light gasolines are given in Figure 3. These were arrived at by calculation from the gravities of the components and finished blends. It will be noted that there is very little difference between the amount of each of the light gasolines required to bring the blend to the constant vapor pressure. For both heavy gasoline A and B a single line has been drawn but it will be noted that the points indicate that there are two lines very close together. For gasoline C this tendency is more pronounced and here two lines are shown. In each case, however, the trend is in the same direction in that for same percentages of light gasoline the natural gasoline can have a somewhat higher vapor pressure to result in the same vapor pressure for the blend.

As would be expected the natural gasoline blends have noticeably higher gravities, all other factors being the same. The distillation characteristics are a function of the per cent of the light gasoline, irrespective of the type. Figures 4, 5 and 6 show graphically the antiknock characteristics of the blends.

From Figure 4 it is found that for all instances the difference in A.S.T.M. octane number between natural gasoline blends and vapor recovery gasoline blends, each containing the same vapor pressure light gasoline, is appreciably less than the difference in the Series 30 octane numbers of these same blends. The same holds true for the difference in A.S.T.M. octane numbers in respect to the difference in C.F.R. research octane numbers except in the case of the straightrun gasoline C. Here there is very little difference for these latter two methods. It should be observed that in all cases the vepor recovery blend had a higher octane number than the equivalent natural gasoline blend regardless of the test method.

The large octane number differences in Figure 4 in favor of vapor recovery gasoline, exaggerated as they are by the high percentages of light gasolines, may appear at first to be discouraging to natural gasoline men. However, the relationships do demonstrate the contention that the A.S.T.M. antiknock method improves the relative standing of natural gasoline. If natural gasoline were useful to refiners or other blenders under the conditions portrayed by the broken lines, representing the older methods, the product should be still more useful under the new A.S.T.M. procedure.

The superiority of the TEL response of the natural gasoline blends on the new A.S.T.M. method is very clearly shown in Figure 6. In every instance the TEL requirements of the natural gasoline blend to the new ethyl standard is lower than the one for the corresponding blend with vapor recovery gasoline, even though the latter blend has the higher original octane number. To the old ethyl standard the TEL requirements for the vapor recovery blends are less than those for the natural gasoline blends

TABLE 4—CHARACTERISTICS OF THE VARIOUS COMPOSITE VAPOR RECOVERY GASOLINES

A. Volatility Characteristics

SS No.	Fuel	R.V.P.	°A.P.I.	A.S.T.M. evap. temp. °F. 10%	50%	90%	95%
13,667	Composite B.F. vapor recovery gasoline	10.95	76.5	111	135	212	244
13,673	14-lb. composite vapor recovery gasoline	14.75	78.6	97	128	205	235
13,689	18-lb. composite vapor recovery gasoline	17.9	81.0	88	123	198	226
13,690	22-lb. composite vapor recovery gasoline	21.7	83.0	75	112	198	229
13,691	26-lb. composite vapor recovery gasoline	25.4	85.4	68	102	196	223

B. Octane Numbers

Fuel—	A.S.T.M.	C.F.R. research
Composite B.F. vapor recovery gasoline	70.8	74.8
14-lb. composite vapor recovery gasoline	73.6	78.0
18-lb. composite vapor recovery gasoline	75.9	81.1
22-lb. composite vapor recovery gasoline	77.9	82.5
26-lb. composite vapor recovery gasoline	79.3	83.2

C. Composition Analysis

Fuel—	Propane	Butane	Butenes	Pentanes	Pentenes	Hexanes	Hexenes	Heavier
Composite B.F. vapor recovery gaso.	1.3	0.5	29.6	15.3	18.5	10.6	24.2	
14-lb. composite vapor recovery gaso.	8.5	2.2	26.3	14.0	17.7	9.6	21.7	
18-lb. composite vapor recovery gaso.	13.9	4.4	25.4	11.7	16.0	8.8	19.8	
22-lb. composite vapor recovery gaso.	19.1	7.3	22.4	11.1	14.1	8.3	17.7	
26-lb. composite vapor recovery gaso.	0.4	24.4	9.7	19.5	9.8	13.3	7.2	15.7

TABLE 5—CHARACTERISTICS OF THE VARIOUS NATURAL GASOLINES

A. Volatility Characteristics

SS No.	Fuel	R.V.P.	°A.P.I.	A.S.T.M. evap. temp. °F. 10%	50%	90%	95%
13,603	B.F. natural gasoline	11.45	78.8	113	136	214	242
13,478	14-lb. natural gasoline	14.75	81.0	97	128	210	235
13,479	18-lb. natural gasoline	18.65	83.9	83	118	204	229
13,480	22-lb. natural gasoline	21.5	85.7	76	112	204	228
13,481	26-lb. natural gasoline	25.2	88.8	70	100	193	220
13,428	26-70 natural gasoline	25.0	88.2	69	102	196	222

B. Octane Numbers

Fuel—	A.S.T.M.	C.F.R. research
B.F. natural gasoline	64.9	65.5
14-lb. natural gasoline	69.8	69.8
18-lb. natural gasoline	73.8	72.8
22-lb. natural gasoline	75.0	74.4
26-lb. natural gasoline	79.1	76.5
26-70 natural gasoline	79.2	76.0

C. Composition Analysis[1]

Fuel—	Propane	Isobutane	Butanes	Isopentane	Pentanes	Hexanes	Hexanes and heavier
B.F. Natural gasoline	...	...	2.6	....	43.4	....	54.0
14-lb. natural gasoline	...	...	9.1	....	41.4	....	49.5
18-lb. natural gasoline	...	...	20.3	....	36.3	....	43.4
22-lb. natural gasoline	...	...	26.1	....	33.0	....	40.9
26-lb. natural gasoline	...	...	31.1	....	33.8	....	35.1
26-70 natural gasoline	...	...	31.4	....	32.1	....	36.5
26-70 natural gasoline[2]	0.3	0.3	31.7	11.3	32.7	19.0	35.3

[1]Reference 11. [2]Actual analysis.

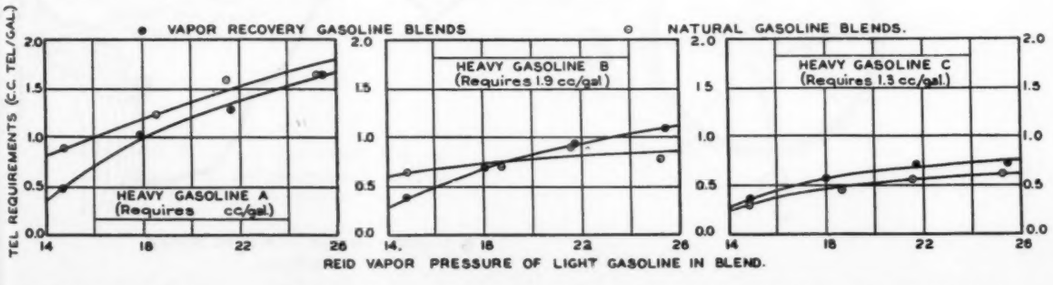

VAPOR RECOVERY GASOLINE BLENDS
NATURAL GASOLINE BLENDS.
TEL REQUIREMENTS (C.C. TEL/GAL.)
HEAVY GASOLINE A (Requires cc/gal)
HEAVY GASOLINE B (Requires 1.9 cc/gal)
HEAVY GASOLINE C (Requires 1.3 cc/gal)
REID VAPOR PRESSURE OF LIGHT GASOLINE IN BLEND.

Figure 5—C.F.R. Motor TEL requirements to 70 octane number on the natural and vapor recovery blends

Headquarters for

● Indicates location of Warren Natural Gasoline.

Natural Gasoline

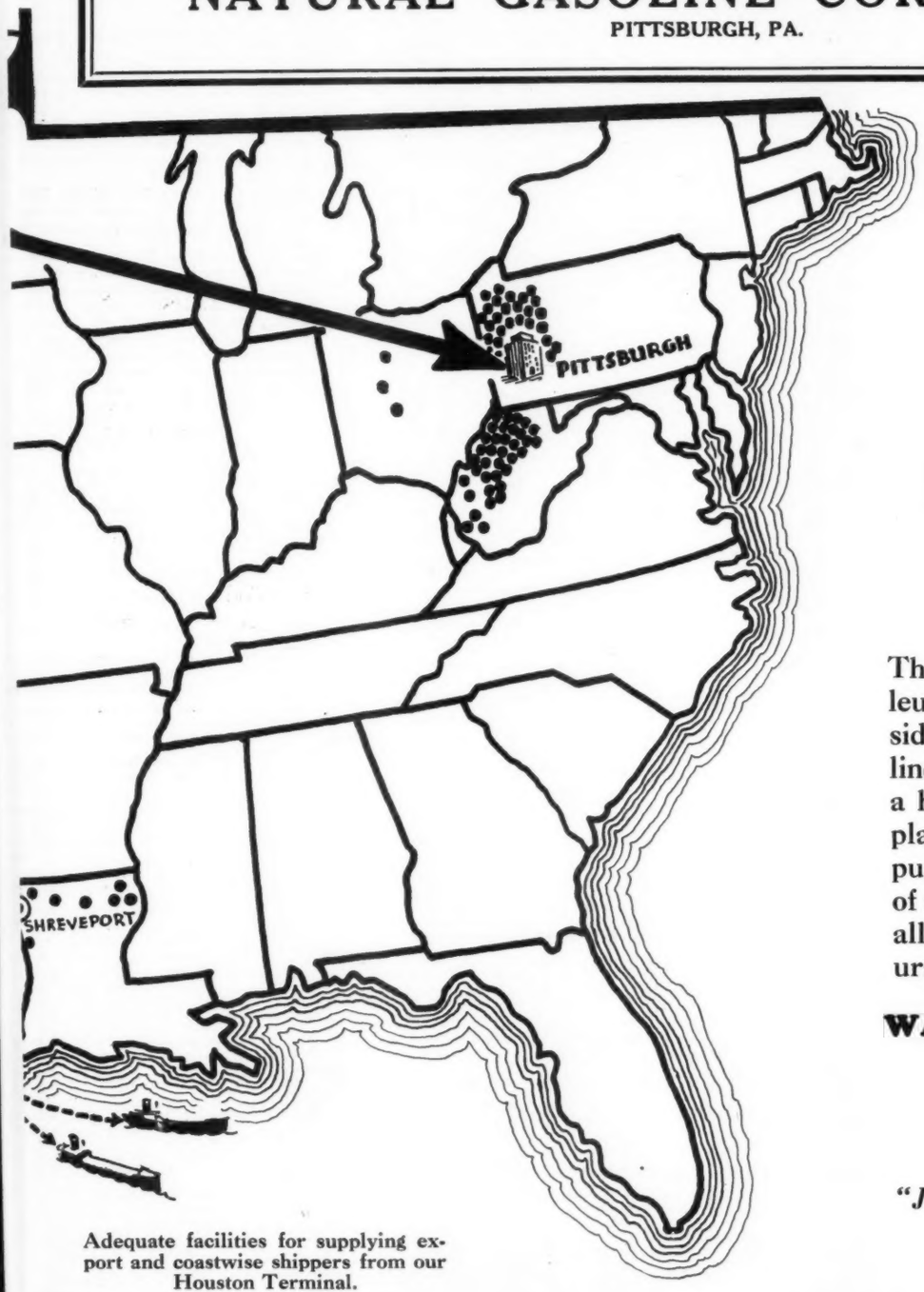
WARREN PETROLEUM COMPANY

TULSA, OKLAHOMA

—and Subsidiary

NATURAL GASOLINE CORPORATION

PITTSBURGH, PA.



Adequate facilities for supplying export and coastwise shippers from our Houston Terminal.

Through the Warren Petroleum Company and its subsidiary, the Natural Gasoline Corporation, more than a hundred natural gasoline plants are united for a single purpose—meeting the needs of natural gasoline users for all grades of stabilized natural gasoline.

WARREN PETROLEUM COMPANY

Exchange Bank Building

Tulsa, Okla.

"Just Natural Gasoline"

except for the higher vapor pressure light gasoline blends with gasoline C.

It is also quite evident in this figure that TEL requirements by the new method are appreciably increased over those of the old method for making ethyl gasoline except in the case of the natural gasoline blends with straightrun gasoline C. In all cases, though, this increase is considerably more for the vapor recovery gasoline blends than for the natural gasoline blends.

The heavy gasolines do not seem to affect the relationship of the A.S.T.M. TEL requirements of the vapor recovery and natural gasoline blends; whereas, by the Series 30 method it appears that the better the TEL response of the heavy gasoline, the closer the TEL requirements of the natural gasoline blends to those of the vapor recovery.

The situation of heavy gasoline B under the A.S.T.M. method is interesting. Blended with vapor recovery gasoline, 29 per cent of a 21-pound product were required to stay under the 3 cc. limit. With natural gasoline a 26-pound could be used and only 22 per cent would be needed.

Straightrun gasoline C provides another interesting exception when compared with heavy products containing cracked gasoline. It was the only one of this group in which lower TEL requirements prevailed under the A.S.T.M. method than under the Series 30 method. This advantage was lost in blending with vapor recovery gasoline but was retained in blending with natural gasoline.

In Figure 5 the results are shown as to what might be expected in the manufacture of "Q" gasoline. The natural gasoline blends again show superiority over the vapor recovery blends in TEL requirements except for gasoline A and the lower light gasoline vapor pressure blends with gasoline B.

Figure 7 presents data comparing the TEL response of the light gasolines in the butane-free condition. It is noteworthy that the natural gasoline is considerably more TEL responsive than the vapor recovery gasoline regardless of whether the old or new test method is used. For the new A.S.T.M. method more than 6 cc. of TEL are required in the B.F. vapor recovery gasoline to produce an octane number increase equivalent to that produced by 1 cc. in the B.F. natural gasoline. With old Series 30 method about 2.5 cc. of TEL were required in the B.F. vapor recovery gasoline to produce the increase obtained by the use of 1 cc. in the B.F. natural gasoline.

TABLE 6—THE CHARACTERISTICS OF THE HEAVY GASOLINES

A. Volatility Characteristics

SS No.	Fuel	R.V.P.	°A.P.I.	A.S.T.M. evap. temp. °F. 10%	50%	90%	95%
13,472	Heavy gasoline A	2.9	55.4	183	290	387	403
13,488	Heavy gasoline B	5.25	52.1	186	317	383	399
13,482	Heavy gasoline C	6.6	60.5	153	245	343	362

B. Octane Numbers

Fuel—	A.S.T.M.	C.F.R. research	E.G.C. Ethyl base
Heavy gasoline A*	53.5	52.0	54.5
Heavy gasoline B	57.8	57.5	58.6
Heavy gasoline C	56.4	53.5	54.6

C. TEL Requirements (cc./gal.)

Fuel—	A.S.T.M. To 70 octane No.	A.S.T.M. To C-6 octane No.	E.G.C. Ethyl base To 70 octane No.	E.G.C. Ethyl base To 78 octane No.
Heavy gasoline A*	3.5	7.5	2.5	5.1
Heavy gasoline B	1.9	4.8	1.5	3.3
Heavy gasoline C	1.3	2.2	1.3	2.55

*Estimated.

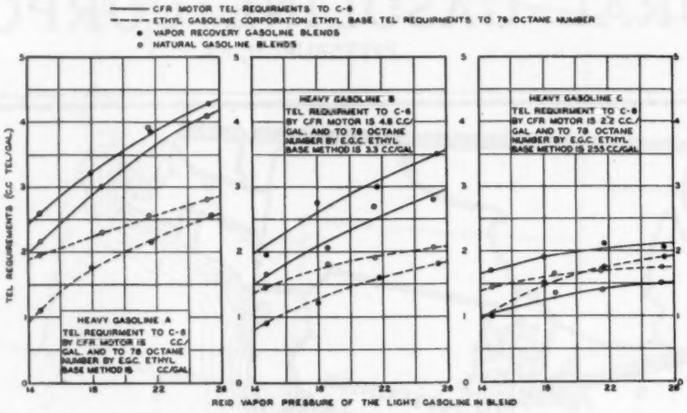

CFR MOTOR TEL REQUIRMENTS TO C-6
ETHYL GASOLINE CORPORATION ETHYL BASE TEL REQUIRMENTS TO 78 OCTANE NUMBER
VAPOR RECOVERY GASOLINE BLENDS
NATURAL GASOLINE BLENDS
HEAVY GASOLINE A
TEL REQUIRMENT TO C-6 BY CFR MOTOR IS CC./GAL. AND TO 78 OCTANE NUMBER BY E.G.C. ETHYL BASE METHOD IS CC./GAL.
HEAVY GASOLINE B
TEL REQUIRMENT TO C-6 BY CFR MOTOR IS 4.8 CC./GAL. AND TO 78 OCTANE NUMBER BY E.G.C. ETHYL BASE METHOD IS 3.3 CC./GAL
HEAVY GASOLINE C
TEL REQUIRMENT TO C-6 BY CFR MOTOR IS 2.2 CC./GAL. AND TO 78 OCTANE NUMBER BY E.G.C. ETHYL BASE METHOD IS 2.55 CC./GAL
TEL REQUIREMENTS (C.C. TEL/GAL.)
REID VAPOR PRESSURE OF THE LIGHT GASOLINE IN BLEND

Figure 6—Comparison of TEL requirements of the natural gasoline blends with those of the vapor recovery blends

Conclusions

In general the data in this paper have proven correct the prevailing viewpoints regarding the relative blending values of vapor recovery and natural gasolines.

The volatility effects of the two light gasolines are practically identical except for a slight vapor pressure margin in favor of natural gasoline. The A.P.I. gravities of natural gasoline blends are noticeably higher than those of vapor recovery gasoline blends.

The octane number of vapor recovery gasoline blends is higher than the octane number of equivalent natural gasoline blends regardless of the method of test. This advantage of vapor recovery gasoline has been appreciably diminished with advent of the A.S.T.M. antiknock method. Therefore, natural gasoline should be more useful than it was formerly.

Natural gasoline is much more lead responsive than vapor recovery gasoline. This inherent advantage of natural gasoline is made of practical significance in the transition from the Series 30 testing to A.S.T.M. procedure. Under the A.S.T.M. procedure natural gasoline blends require less TEL than the vapor recovery gasoline blends, particularly to meet the new ethyl standard.

Acknowledgments

It would only be fair to conclude this paper by acknowledging that much of the data presented here were obtained through efforts other than my own. Practically every member of our research department contributed to the project. In particular, acknowledgment is made to K. H. Hachmuth for preparation of samples, to L. H. Fitch, Jr. and A. F. Jirous for composition analyses, to R. R. Couch and A. J. Pettigrove for antiknock testing, and to R. C. Alden for helpful general suggestions. To the five companies who made it possible to study a composite vapor recovery gasoline, much appreciation is due by all who obtain any value from this paper.

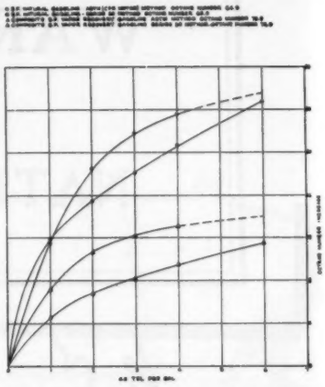


Figure 7—Comparison of the TEL response of B.F. vapor recovery gasoline and natural gasoline

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TABLE 7—THE VOLATILITY OF THE VARIOUS BLENDS

SS No.	Fuel	R.V.P.	°A.P.I.	A.S.T.M. evap. temp. °F. 10%	50%	90%	95%
	Heavy Gasoline A						
13,722	A + 26-lb. vapor recovery gasoline	11 2	62.6	112	237	374	394
13,716	A + 22-lb. vapor recovery gasoline	11.05	64.0	111	221	370	391
13,710	A + 18-lb. vapor recovery gasoline	11.4	66.3	108	194	365	387
13,655	A + 14-lb. vapor recovery gasoline	11.55	69.1	108	166	346	382
13,448	A + 26-lb. natural gasoline	11.8	64.2	197	228	375	395
13,442	A + 22-lb. natural gasoline	11.2	65.0	108	220	371	390
13,436	A + 18-lb. natural gasoline	11.65	67.2	106	200	366	392
13,430	A + 14-lb. natural gasoline	11.65	70 8	109	167	348	390
	Heavy Gasoline B						
13,740	B + 26-lb. vapor recovery gasoline	11.25	58.6	112	286	379	396
13,734	B + 22-lb. vapor recovery gasoline	11.0	59.8	113	268	376	394
13,728	B + 18-lb. vapor recovery gasoline	11.3	62.2	110	234	370	388
13,661	B + 14-lb. vapor recovery gasoline	11.9	66.2	107	182	363	384
13,542	B + 26-lb. natural gasoline	11.4	59.4	116	285	378	395
13,498	B + 22-lb. natural gasoline	11.3	60.6	111	268	377	393
13,548	B + 18-lb. natural gasoline	11.7	63.0	109	241	371	399
13,566	B + 14-lb. natural gasoline	11.1	67.5	109	185	359	385
	Heavy Gasoline C						
13,704	C + 26-lb. vapor recovery gasoline	11.1	64.5	119	225	338	363
13,698	C + 22-lb. vapor recovery gasoline	11.25	65.2	115	217	334	357
13,692	C + 18-lb. vapor recovery gasoline	11.3	66.7	113	200	328	355
13,674	C + 14-lb. vapor recovery gasoline	11.1	69.4	111	175	311	347
13,454	C + 26-lb. natural gasoline	11.7	65.5	113	219	339	363
13,470	C + 22-lb. natural gasoline	11.4	66.3	113	212	334	360
13,554	C + 18-lb. natural gasoline	11.6	67.2	113	204	331	356
13,560	C + 14-lb. natural gasoline	11.55	71.4	109	172	315	358

TABLE 8—THE OCTANE NUMBERS OF THE BLENDS

SS No.	Fuel	A.S.T.M.	C.F.R. research	E.G.C. Ethyl base
	Heavy Gasoline A			
13,722	A + 26-lb. vapor recovery gasoline	60.8	61.5	61.4
13,716	A + 22-lb. vapor recovery gasoline	61.8	63.2	63.1
13,710	A + 18-lb. vapor recovery gasoline	63.8	65.8	66.4
13,655	A + 14-lb. vapor recovery gasoline	66.5	68.5	68.7
13,448	A + 26-lb. natural gasoline	59.2	60.0	59.7
13,442	A + 22-lb. natural gasoline	59.5	60.2	60.0
13,436	A + 18-lb. natural gasoline	60.2	60.8	60.6
13,430	A + 14-lb. natural gasoline	61.9	62.4	62.0
	Heavy Gasoline B			
13,740	B + 26-lb. vapor recovery gasoline	62.4	64.2	63.1
13,734	B + 22-lb. vapor recovery gasoline	63.1	66.0	64.0
13,728	B + 18-lb. vapor recovery gasoline	64.4	67.8	66.9
13,661	B + 14-lb. vapor recovery gasoline	67.2	69.6	69.3
13,542	B + 26-lb. natural gasoline	61.8	63.0	61.8
13,498	B + 22-lb. natural gasoline	61.8	63.2	61.8
13,548	B + 18-lb. natural gasoline	62.5	63.5	62.5
13,566	B + 14-lb. natural gasoline	62.9	64.0	63.0
	Heavy Gasoline C			
13,704	C + 26-lb. vapor recovery gasoline	61.2	61.8	61.5
13,698	C + 22-lb. vapor recovery gasoline	62.0	62.5	62.4
13,692	C + 18-lb. vapor recovery gasoline	63.4	63.5	64.0
13,674	C + 14-lb. vapor recovery gasoline	66.4	68.1	68.4
13,454	C + 26-lb. natural gasoline	60.7	61.5	60.0
13,470	C + 22-lb. natural gasoline	60.9	61.5	60.2
13,554	C + 18-lb. natural gasoline	61.3	61.8	60.3
13,560	C + 14-lb. natural gasoline	63.0	63.3	62.4

TABLE 9—THE TEL REQUIREMENTS OF THE BLENDS (cc. Tel/gal.)

SS No.	Fuel	A.S.T.M. To 70 octane No.	A.S.T.M. To C-6 octane No.	E.G.C. Ethyl base To 70 octane No.	E.G.C. Ethyl base To 78 octane No.
	Heavy Gasoline A				
13,722	A + 26-lb. vapor recovery gasoline	1.65	4.3	1.0	2.55
13,716	A + 22-lb. vapor recovery gasoline	1.3	3.85	0.8	2.15
13,710	A + 18-lb. vapor recovery gasoline	1.05	3.2	0.45	1.75
13,655	A + 14-lb. vapor recovery gasoline	0.5	2.6	0.1	1.1
13,448	A + 26-lb. natural gasoline	1.65	4.1	1.2	2.8
13,442	A + 22-lb. natural gasoline	1.6	3.9	1.05	2.55
13,436	A + 18-lb. natural gasoline	1.25	3.0	0.95	2.3
13,430	A + 14-lb. natural gasoline	0.9	2.15	0.75	1.95
	Heavy Gasoline B				
13,740	B + 26-lb. vapor recovery gasoline	1.1	3.5	0.65	1.8
13,734	B + 22-lb. vapor recovery gasoline	0.95	3.0	0.5	1.6
13,728	B + 18-lb. vapor recovery gasoline	0.7	2.75	0.25	1.2
13,661	B + 14-lb. vapor recovery gasoline	0.4	1.95	0.05	0.9
13,542	B + 26-lb. natural gasoline	0.8	2.8	0.75	2.05
13,498	B + 22-lb. natural gasoline	0.9	2.7	0.7	1.9
13,548	B + 18-lb. natural gasoline	0.7	2.05	0.65	1.8
13,566	B + 14-lb. natural gasoline	0.65	1.65	0.5	1.45
	Heavy Gasoline C				
13,704	C + 26-lb. vapor recovery gasoline	0.7	2.05	0.75	1.9
13,698	C + 22-lb. vapor recovery gasoline	0.7	2.1	0.6	1.75
13,692	C + 18-lb. vapor recovery gasoline	0.55	1.9	0.5	1.5
13,674	C + 14-lb. vapor recovery gasoline	0.35	1.7	0.1	1.0
13,454	C + 26-lb. natural gasoline	0.6	1.5	0.85	1.75
13,470	C + 22-lb. natural gasoline	0.55	1.4	0.75	1.7
13,554	C + 18-lb. natural gasoline	0.5	1.35	0.75	1.65
13,560	C + 14-lb. natural gasoline	0.3	1.0	0.6	1.45

TABLE 10—GUM TEST DATA ON THE VARIOUS SAMPLES

SS No.	Fuel	Sub-Comm. of D-2 on gum, Method A Mg./100 cc.	S.O.N.J. method, induction period
13,482	Heavy gasoline C	1.4	>360 min.
13,704	C + 26-lb. vapor recovery gasoline	6.0	>360 min.
13,698	C + 22-lb. vapor recovery gasoline	1.4	215 min.
13,692	C + 18-lb. vapor recovery gasoline	3.4	87 min.
13,674	C + 14-lb. vapor recovery gasoline	3.2	40 min.
13,667	Composite B.F. vapor rec. gaso.	7.4	25 min.
13,454	C + 26-lb. natural gasoline	1.6	>360 min.
13,470	C + 22-lb. natural gasoline	1.4	>360 min.
13,554	C + 18-lb. natural gasoline	1.6	>360 min.
13,560	C + 14-lb. natural gasoline	2.0	>360 min.
13,602	B.F. natural gasoline	7 6	>360 min.

Present Production and Likely Future Trends of Mid-Continent Natural Gasoline Industry

By E. BUDDRUS
Phillips Petroleum Co.*

The selection of the above title was a matter of small moment several months ago but the subsequent realization of its broad scope impressed the writer that he had covered too much territory. Briefly, the discussion will center around pertinent production statistics obtained from Bureau of Mines reports, possible increases and decreases in production with reasons, and both favorable and unfavorable factors influencing the industry at present.

The accompanying table has been prepared giving the essential production figures for the past five years. In its preparation Mid-Continent production was considered as that made in Oklahoma, Kansas, Texas, Louisiana, Arkansas and New Mexico. The normal refinery market for Mid-Continent natural gasoline included the same states as given above and in addition Illinois, Indiana, Missouri and Kentucky.

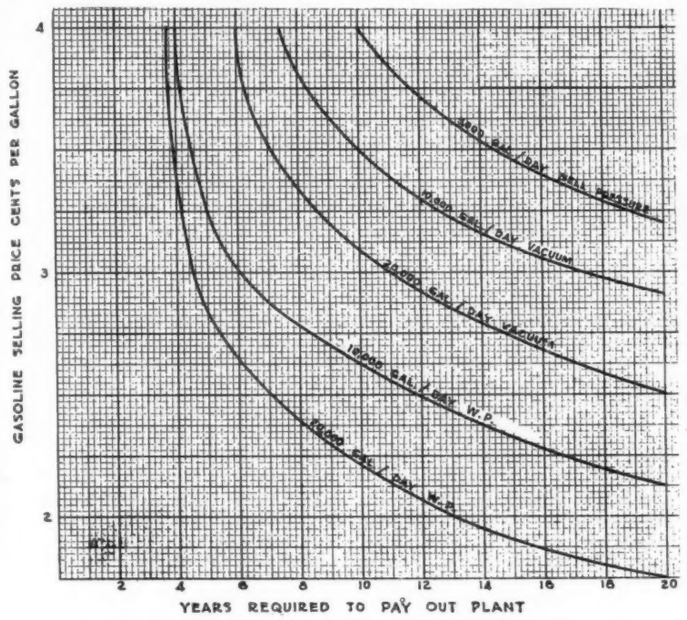
Past Record

All of you are probably familiar with the production record of natural gasoline for the past five years as shown in Column 1. Our peak production years were 1929 and 1930 and since that time the annual production has declined 31.2 per cent. During this same period production for the entire United States declined 32 per cent, indicating that the decline was general. Surveys conducted in the spring of 1930 and 1932 show that one-third of the Mid-Continent decline is due to the manufacture of larger percentage of low vapor pressure gasoline. This materialized as the demand from the refiners decreased, and heavier natural was made from the surplus which could be forced into other channels. A predicted production of 2,100,000 gallons is given for 1933. Production records for January and February of this year tend to confirm this, and it is not expected that any substantial increases will occur during the remainder of 1933. Stocks at plants decreased in 1932 from 33,300,000 gallons to 26,800,000 gallons, a drop of 6,500,000 gallons. From a production standpoint alone, when demand is not considered, our industry is in an excellent position. Column 3 of the table shows that the average gallons blended daily by the refiners in the normal market territory reached its peak in 1930; Column 7 also reflects this peak in per cent blended in motor fuel. In 1931, however, the per cent of the total natural production used by refiners was 85.3, showing that while refiners reduced their per cent blended from 9.6 to 7.9, the decrease in natural production practically offset the reduction in the amount blended. Under these conditions, with supply reduced to a point substantially equaling demand, the average selling price for natural declined from 5.28 to 3.02 cents, or 42.8 per cent.

Low 1932 Production

In 1932 our production declined 470,000 gallons daily but this reduction was not sufficient to offset the decreased refiners' demand which was 670,000 gallons daily. The difference, 200,000 gallons, was forced into other uses; that is, export, coastwise, jobbers, blenders, aviation fuel, and special products. Here the natural gasoline industry felt its first effect of decreased motor fuel consumption. Had the refiners produced as much gasoline in 1932 as they did in 1931, and had the natural per cent blended figure remained the same as it was in 1932, they would have used 26,000 gallons daily additional which is only 1.1 per cent of the 1932 production, not a very large factor influencing our present difficulties. Again natural prices dropped from 3.20 to 2.24 cents, a decline of 25.8 per cent.

Cracked gasoline production increased sharply through 1931 due primarily to increased motor fuel production and raising antiknock standards. The per cent of the total production, however, has been practically constant since 1930. It is believed that the larger refiners have actually increased their cracked production ratio to a greater extent than these figures indicate; likewise the recent increased production from small topping plant refiners has tended to reduce the ratio, so in effect the overall ratio has not been altered materially. Since Column 9 indicates that the per cent of cracked gasoline production made is being flattened out, and since it is believed that those refiners who can economically build vapor recovery plants have done so, it is a reasonable assumption that the further depressing effect on the natural industry, due to refinery vapor gasoline, should tend to decrease. The above conclusion is not sound as viewed from a motor fuel volatility standpoint. Records show that the average motor fuel volatility is increasing in spite of the fact that the per cent of natural gasoline blended is decreasing sharply. This is particularly true for the past 18 months. Obviously vapor recovery gasoline is still making inroads on the refiner's need for natural gasoline. Factors favorable toward offsetting this condition are: Decided tendency to further increase the volatility and vapor pressure which will allow motor fuel to absorb larger per cents of natural; the use of "Q" lead blending material to obtain added antiknock properties in lieu of cracking (since each barrel of cracked gasoline produces approximately 2 gallons of vapor recovery gasoline, any widespread use of "Q" fluid should be a decided advantage to the gasoline manufacturer); recent octane testing methods which improve the antiknock rating of natural gasoline; an increased appreciation of the fact that butane for volatility purposes is of questionable value, whether it be furnished by the refiner or natural gasoline manufacturer; and reforming possibilities of lighter hydrocarbons which will reduce them to a heavier product of much lower volatility.



Relationship of factors influencing profitable operation of plants

Refiners' Consumption

Under Column 4 is shown the difference between total natural production and that used in refineries. This difference goes to "other uses" as previously explained. During 1928, 1929, 1930 and 1931, a reasonable trading profit was made by the exporters, jobbers, and blenders from their natural purchases. In 1932 a large increase in the per cent sold to this source was brought about by lack of refiners' demand; this in turn reduced prices well below the motor market, a condition all buyers of our product took advantage of and in terms of the motor fuel price the buyers realized a profit much larger than they had any other previous year. No consolidated information is available which gives a breakdown of the allocation of this gasoline during 1932. It is estimated that volumes to exporters and coastwise users were from 150,000 to 200,000 gallons daily, and to jobbers and blenders 275,000 to 325,000 gallons daily. Our past prices were normal, as judged by the relation between prices of motor fuel and natural, regardless of vapor recovery production, decreased production of natural, or any other yardstick (Column 13), and in line with what could be expected for 1928, 1929, 1930 and 1931; however, for 1932 this relation became indeed a "poor relative," even judged by our present standards. In an effort to dispose of the large surplus developed in 1932, prices were forced down to a new all-time low and approximately one-fourth of our entire production was sold into channels other than to refiners. With the greatest differential between motor fuel and natural prices ever experienced, 1.8 cents, the refiners reduced their per cent blended from 7.9 to 6.2. Would this per cent for 1932 have been further reduced had the two prices been closer together? The answer is probably yes; however, on the other hand, with less going to the refiners, additional constructive steps would have been inaugurated to dispose of the surplus natural to the regular motor fuel market as such. Certainly our salesmanagers should spend a great deal of their time in developing "other uses" which is absorbing one-fourth of our total production. This development should be based on the sale of our product, not as a dumping proposition but rather built on a sound economic foundation that will return relative motor prices to the manufacturer in line with those experienced prior to 1932. No additional increases in

(Continued on Page 78)

*Presented before convention of Natural Gasoline Association of America in Tulsa, May 15-17.

Statistics of the Natural Gasoline Industry in the United States for Past Six Years

PRODUCTION IN 1,000 GALLONS DAILY

Year—	Gallons daily production	Per cent change	Blended by refiners	Other uses: export jobbers coastwise blenders and losses	Per cent of total natural production blended by refiners	Total refining production less natural	Per cent natural in finished fuel	Cracked gasoline made by refining	Per cent cracked made	Gallons natural made/bbl. crude production	Average natural price AA or 26-lb.	Average motor fuel price	Difference motor fuel minus natural price
	1	2	3	4	5	6	7	8	9	10	11	12	13
1928	2,940	+ 9.7	2,175	765	84.0	23,420	8 5	9,430	40.3	1.79	.0735	.0792	.0057
1929	3,363	+14.6	2,690	670	80.0	25,940	9.4	10,800	41.6	1.91	.0691	.0752	.0061
1930	3,360	— .3	2,840	522	84.5	26,800	9 6	12,250	45.8	2.04	.0528	.0607	.0070
1931	2,780	—17.1	2,370	410	85.3	27,840	7.9	12,800	45.9	1.68	.0202	.0365	.0063
1932	2,310	—17.2	1,700	610	73.6	25,820	6.2	11,900	46.0	1.59	.0224	.0404	.0180
1933 (est.)	2,100	— 9.1											

Combined Capacity of Gasoline Plants in United States Shows Decrease for the First Time

By W. T. ZIEGENHAIN

In the past year approximately a quarter million gallons daily capacity was abandoned among the natural gasoline plants in the United States and additional plants were temporarily shut down. The trend toward fewer but larger plants was given impetus by the abandonment of plants of 20 to 200 gallons daily capacity, particularly in the older fields of Pennsylvania, West Virginia and Illinois.

The total capacity of all plants on May 1 of this year was 10,308,354 gallons daily compared with 10,536,182 gallons a year ago. This year marks the first time in the history of the natural gasoline industry that a decline in the total capacity of plants showed a decline. Of the respective states, California shows the greatest loss in capacity. This is due principally, however, because of a revision of the stated capacity of the same plants. For instance, in those fields where there has been a natural decline in the gas supply and there was no need to maintain the original equipment, a part of it has been moved, junked or written off in some form or another, so that the present plant has a reported capacity more in likeness to its actual production.

This same readjustment of capacities is evident throughout the list and is quite pronounced in the Oklahoma City plants as well as in the older California fields. This factor probable accounts for a much larger share of the total decrease than the abandoning of plants. As further indication of the strained economic conditions within the industry it will be noted that on May 1 of this year 159 plants capable of operating are reported shut down, while a year ago the number of idle plants stood at 112, an increase of 47 during the year.

The combined capacity of these plants this year was 1,092,835 gallons compared with 815,710 gallons last year, an increase in the combined capacity of the idle plants of 277,126 gallons. The move to shut down smaller plants is shown by the fact that the average idle plant a year ago had a capacity of 7,200 gallons daily, while the average idle plant this year has a capacity of 6,900 gallons.

California's Position

Despite a material reduction in its plant capacity, California retains a substantial lead over all other states. Texas continued its climb by showing a small increase, due principally to new plants in East Texas. While this field is not looked upon as an important producer of natural gasoline, and over the future will not be an important source, at the present time it is taking up enough of the natural drop throughout the other fields of the State to balance. Probably a more important area for the future development of the industry in Texas is in the Conroe area. Two plants have been located there and surveys have been conducted for others, but the low market price of the produce has not offered any inducement to build now. Another important development that will cause the building of several plants in Texas is the opening of the Panhandle gas field to where 25 per cent of the potential gas supply may be processed through gasoline plants and the residue burned for carbon black or wasted in the air. Here again, there is no interest shown in the building of plants due to the poor market prices, but should a readjustment of prices come about, the extension of lines will result and new plants will be justified.

In the Oklahoma City Field, where proration has limited the supply of gas almost since the day the plants were built, the production of natural gasoline is likely to continue near its present level for many months. Some time during 1933 many of the flowing wells will have to be equipped with pumps or flowed by some outside means and the richness of the gas should increase. This factor will probably outweigh the loss in gas volume.

In the older fields of Pennsylvania and West Virginia there is a marked falling off in the output of these plants as shown by the Bureau of Mines figures monthly, and in many cases the operation of gasoline plants can be justified only on the basis of their being a part of the procedure of producing oil. In many cases these plants act as booster stations for gast lift or repressuring and the production of gasoline is incidental.

If the present status of prices continues there is not much encouragement in the outlook for 1933, but many who have studied the economics of the industry point to a reversal of the present trend. They point to the fact that natural gasoline can be made more cheaply than refinery gasoline and there must come a strengthening of all gasoline prices to avert bankrupting the entire petroleum industry. They also see in East Texas the basis for more than 90 per cent of the trouble. Once the East Texas Field indicates it can not go on indefinitely to produce crude, an immediate strengthening of all markets is assured. It is also assured that East Texas can not go on indefinitely producing a million barrels of crude a day. A price advance to 3 cents would return the operation of many natural gasoline plants to a profitable basis and would justify an expansion of facilities to take up the natural decline to production if not to actually increase production.

Jobbers' Influence

Another favorable factor pointed to often is the growing acceptance of 100 per cent natural gasoline by jobbers as a satisfactory motor fuel. More recently, the adoption of a second grade of Ethyl Gasoline by several refiners is expected to increase the use of natural gasoline.

The manner in which this will be done is through the greater use of straightrun gasoline of higher than the present endpoint, to which must be added natural gasoline to improve its volatility. Refiners have been reducing the endpoint of their production to gain octane value and have been reforming to gain octane value, both of which tended to decrease the need for natural. Now, if the ethyl fluid is generally adopted, and consumption gradually comes back to normal, there is no apparent reason why more natural gasoline will not be needed and purchases by refiners will be made providing there is not too great a cost penalty attached to the deal.

Trend in Natural Gasoline Plant Operations

GROWTH BY YEARS

	No. of plants	Daily capacity (gallons)
May 1, 1933	919	10,308,354
May 1, 1932	948	10,536,182
May 1, 1931	987	10,531,511
May 1, 1930	1,071	9,541,320
May 1, 1929	1,124	8,695,727
May 1, 1928	1,229	7,865,652
May 1 1927	1,148	6,947,264
May 1, 1926	1,063	5,121,000
May 1, 1925	1,143	4,642,561
May 1, 1924	1,012	3,396,961

PLANT CAPACITIES BY STATES

	Status of Plants May 1 — No. of plants		Daily capacity	
	1933	1932	1933	1932
Arkansas	10	12	70,450	97,950
California	144	143	3,790,730	4,014,430
Colorado	3	3	13,000	13,000
Illinois	64	71	47,993	50,995
Kansas	24	22	230,700	223,700
Kentucky	6	6	39,900	39,200
Louisiana	46	45	435,330	397,155
New Mexico	3	3	79,000	79,000
New York	3	3	1,900	1,900
Ohio	22	26	65,371	66,050
Oklahoma	215	230	2,253,466	2,359,265
Pennsylvania	130	143	118,400	118,947
Texas	139	137	2,566,900	2,449,100
West Virginia	101	95	392,254	404,530
Wyoming	9	9	202,960	167,960
TOTAL	919	948	10,308,354	10,536,182

Note—May 1, 1932, includes 112 plants with 815,710 gallons daily capacity listed as shut down. May 1, 1933, includes 159 plants with 1,092,835 gallons daily capacity listed as shut down.

1933 Survey of Natural Gasoline Plants in the United States

STAR (*) INDICATES PLANT SHUT DOWN

ARKANSAS

Company and plant address—	Field location—	Type of plant	Daily cap'y (gals.)
Arkansas Natural Gas Corp., El Dorado	Sec. 31-17s-15w	C-A	10,000
Gulf Refining Co. of Louisiana, El Dorado	El Dorado south field	Absp.	4,000
Henderson Co., El Dorado	El Dorado	C-A	11,000
Imperial Oil & Gas Products Co., Smackover	Smackover	Comp.	500
Magnolia Petroleum Co., El Dorado	Sec. 8-15-16, Union County	Absp.	6,500
Rainbow Gasoline Corp., Tulsa, Okla.	Sec. 28-17s-14	C-A	7,000
Reserve Petroleum Co., Box 9, Louann	Sec. 30-15-16	Absp.	6,000
Simms Oil Co., Norphlet	Sec. 29-15s-15w	Char.	5,000
Simms Oil Co., Norphlet	Sec. 9-16s-15w	Char.	5,000
Standard Oil Co. of Louisiana	El Dorado, 3 mi.	C-A	19,234
Standard Oil Co. of Louisiana	Smackover, 3 mi.	Absp.	916

CALIFORNIA

Company and plant address—	Field location—	Type of plant	Daily cap'y (gals.)
American Natural Gasoline Corp., Santa Maria,	Santa Maria Field	Absp.	*7,500
Bankline Oil Co., Willow St., Signal Hill	Farm Lot 64, Signal Hill	Absp.	22,500
Barnsdall Oil Co. of California, Goleta	Sec. 14-4n-29w	Absp.	65,000
Beiridge Oil Co., Taft	Elk Hills, Sec. 34-30-24	Absp.	7,000
Beiridge Oil Co., McKittrick	Beiridge, Sec. 26-27-20	Absp.	50,000
Beiridge Oil Co., McKittrick	South Beiridge, Sec. 33-28-27	Absp.	*5,000
Beiridge Oil Co., McKittrick	Beiridge, Sec. 35-27-20	Absp.	5,000
Boisa Chica Oil Corp., Ventura	Ventura	Absp.	15,000
Boisa Chica Oil Corp., Ventura	Ventura	Absp.	*10,000
Brea Canyon Oil Co.	Coyote Hills	C-A	14,000
Calumet Oil Co., Fillmore	Sec. 3-3-19, Ventura County	Comp.	1,000
Coline Gasoline Corp., 319 Kerckhoff Bldg., 560 So. Main St., Los Angeles	Sec. 16-4s-14w	Absp.	6,500
Coline Gasoline Corp., 319 Kerckhoff Bldg., 560 So. Main St., Los Angeles	Sec. 17-3n-24w	Absp.	4,000
Cowan Oil & Refining Co., 6th and Spring St., Los Angeles	Rosecrans	Absp.	10,000
Del Rey Oil & Refining Co., Ltd., 21 Ave. 43, Venice	500 ft. E and 30 ft. S from NE cor., Lot 14, Blk. 13, Del Rey Beach	Absp.	60,000
Edington Gasoline & Refining Co., Inglewood	Aerick & Eastwood Sts., Inglewood	Absp.	6,000
Export Refining Co., Torrance	Torrance Field	.....	*20,000
Field, O. C., Gasoline Corp., 609 Board of Trade Bldg., Los Angeles	Huntington Beach	Absp.	30,000

Company and plant address—	Field location—	Type of plant	Daily cap'y (gals.)
Field, O. C., Gasoline Corp., 609 Board of Trade Bldg., Los Angeles	Maricopa	Absp.	10,000
Fullerton Oil Co., R.F.D. 3, Box 72, Fullerton	Sec. 2-3-10w, Orange County	Absp.	6,000
General Petroleum Corp. of California, Higgins Bldg., Los Angeles	Santa Fe Springs	Absp.	200,000
General Petroleum Corp. of California, Higgins Bldg., Los Angeles	Ventura	Absp.	40,000
General Petroleum Corp. of California, Higgins Bldg., Los Angeles	Athens	Absp.	40,000
General Petroleum Corp. of California	Brea Canyon	C-A	*10,000
Getty, Geo. F., Gasoline Co., 1060 Subway Terminal Bldg., Los Angeles	Seal Beach	Absp.	10,000
Gilmore Gasoline Plant No. 1, 2423 E. 28th St., Los Angeles	Sec. 30-4s-12w	Absp.	30,000
Gilmore-Dabney, 2423 E. 28th St., Los Angeles	Sec. 29-4s-12w	Absp.	30,000
Gilmore-Dabney, 2423 E. 28th St., Los Angeles	Sec. 24-4s-13w	Absp.	30,000
Gilmore-Dabney, 2423 E. 28th St., Los Angeles	Sec. 24-13w-4s	Absp.	30,000
Highway Gasoline Co., Ventura	Ventura Field	Absp.	20,000
Highway Gasoline Co., Ventura	Ventura Field	Absp.	*3,000
Honolulu Oil Corp., Ltd., 215 Market St., San Francisco	Sec. 8-32s-24e, Kern City	C-A	30,000
Honolulu Oil Corp., Ltd., 215 Market St., San Francisco	Sec. 8-32s-24e, Kern City	C-A	30,000
Hokom Oil & Gasoline Co. (J), Lawndale	Lawndale	Absp.	5,000
Lomita Gasoline Co., Box 669, Long Beach	Signal Hill	Absp.	40,000
Los Nietos Producing & Refining Co., Ltd.	Sec. 2-22s-17e	Absp.	100,000
Mohawk Petroleum Co., 30 Ave. 44, Venice	45th and Speedway, Venice	Absp.	10,000
North American Oil Consolidated, Room 915, Balfour Bldg., San Francisco	Sec. 28-31s-23e, M.D.B.&M., Kern County	Absp.	3,000
Norwalk Co., The, Santa Fe Springs	SE SW, Sec. 6, T. 3s, R. 11w, S.B.B.&M.	Absp.	10,000
Norwalk Co., The, Fillmore	McNabb estate	Absp.	*10,000
Norwalk Co., The, Saticoy	Saticoy	Absp.	*10,000
Norwalk Co., The, Bin WW, Taft	Sec. 30, T. 31s, R. 24e, M.D.B.&M.	Absp.	8,000
Norwalk Co., The, Bin WW, Taft	SE, Sec. 36, T. 12n, R. 24e, S.B.B.&M.	Absp.	8,000
Ohio Oil Co., Venice	Los Angeles County	Absp.	20,000
Pacific Western Oil Co., Drawer 86, Goleta	Goleta lease, Elwood	Absp.	25,000
Pacific Western Oil Co., Drawer Z, Ventura	Willett lease, Ventura Ave.	Absp.	35,000
Pan California Gasoline Co., 719 Security Bldg., Los Angeles	Venice	Absp.	15,000
Pan California Oil Corp., 719 Security Bldg., Los Angeles	Inglewood	Absp.	*5,000
Rancho La Brea Oil Co., Salt Lake	Salt Lake Field	Absp.	5,000
Reservoir Hill Gasoline Co., 417 So. Hill St., Los Angeles	Lot 24, Alamitos, Long Beach	Absp.	25,000
Rice Ranch Oil Co., Orcutt	Santa Maria Field	Absp.	1,000
Rio Grande Oil Co., 417 S. Hill St., Los Angeles	Santa Fe Springs	Absp.	30,000
Ryan & Hackett Co., Inc., 511 Associated Realty Bldg., Los Angeles	Signal Hill	Absp.	*3,000
St. Helens Petroleum Co., Ltd., Box 248, Montebello	Sec. 2-2-12, Los Angeles	Absp.	750
St. Helens Petroleum Co., Ltd., Box D, Taft	Sec. 16-32-24, Kern County	Absp.	2,500
Shell Oil Co. of California, 200 Bush St., San Francisco	Grazide lease, Coyote Hills	Absp.	40,000
Shell Oil Co. of California	Sec. 27, Coalinga Hills	Absp.	*4,000
Shell Oil Co. of California	Reyes, Dominguez Field	Absp.	32,000
Shell Oil Co. of California	Rindge, Inglewood Field	Absp.	10,000
Shell Oil Co. of California	Coseboom, Long Beach	Absp.	220,000
Shell Oil Co. of California	Careaga, Santa Maria Field	Absp.	4,000
Shell Oil Co. of California	Gosnell, Ventura Field	Absp.	130,000
Signal Oil & Gas Co., 811 W. 7th St., Los Angeles	Signal Hill	Absp.	30,000
Signal Oil & Gas Co., 811 W. 7th St., Los Angeles	Signal Hill	Absp.	20,000
Signal Oil & Gas Co., 811 W. 7th St., Los Angeles	Signal Hill	Absp.	10,000
Signal Oil & Gas Co., 811 W. 7th St., Los Angeles	Signal Hill	Absp.	*15,000
Signal Oil & Gas Co., 811 W. 7th St., Los Angeles	Signal Hill	Absp.	*10,000
Signal Hill Gasoline Co., 819 Richfield Bldg., Los Angeles	Blk. 64, American Colony tract, Signal Hill Field	Booster	35,000
Signal Hill Gasoline Co.	Blks. F and G, Signal Hill tract	Absp.	*15,000
Signal Hill Gasoline Co.	Farm Lot 78, American Colony tract, Los Angeles County	Booster	11,000
Signal Hill Gasoline Co.	Blk. 58, American Colony tract, Los Angeles County	Absp.	35,000
Signal Hill Gasoline Co.	Sec. 3-21s-24e, Kern County	Absp.	5,000
Signal Hill Gasoline Co.	Sec. 32-12n-23w, Kern County	Absp.	*3,000
Signal Hill Gasoline Co.	Secs. 8 and 17, T. 3n, R. 24w, Kern County	Absp.	6,000
Signal Hill Gasoline Co.	Blk. 712, Wesley Park tract, Orange County	Absp.	5,000
Signal Hill Gasoline Co.	Sec. 36-12n-24w, Kern County	Absp.	*2,000
Southwest Refining Co., Long Beach	Long Beach	Absp.	*5,000
Standard Gasoline Co., 225 Bush St., San Francisco	Santa Fe Springs	Booster	15,000
Standard Gasoline Co.	Santa Fe Springs	Absp.	*45,000
Standard Gasoline Co.	Santa Fe Springs	Comp.	Booster
Standard Gasoline Co.	Santa Fe Springs	Absp.	46,000
Standard Gasoline Co.	Montebello	Booster	*2,300
Standard Gasoline Co.	Murphy Coyote	Absp.	20,000
Standard Gasoline Co.	Kraemer	Absp.	*5,500
Standard Gasoline Co.	Brea	Absp.	6,500
Standard Gasoline Co.	Huntington Beach	Absp.	*10,000
Standard Gasoline Co.	Huntington Beach	Absp.	*10,000
Standard Gasoline Co.	Huntington Beach	Absp.	*20,000
Standard Gasoline Co.	Huntington Beach	Absp.	20,000
Standard Gasoline Co.	Huntington Beach	Absp.	10,000
Standard Gasoline Co.	Seal Beach	Absp.	40,000
Standard Gasoline Co.	Seal Beach	Booster	15,000
Standard Gasoline Co.	Long Beach	Booster	*7,000
Standard Gasoline Co.	Long Beach	Absp.	*2,500
Standard Gasoline Co.	Long Beach	Absp.	30,000
Standard Gasoline Co.	Dominguez	Absp.	6,755
Standard Gasoline Co.	Inglewood	Absp.	*6,000
Standard Gasoline Co.	Inglewood	Absp.	7,500
Standard Gasoline Co.	Torrance	Absp.	6,000
Standard Gasoline Co.	Whittier	Absp.	375
Standard Gasoline Co.	Cypress	Absp.	4,500
Standard Gasoline Co.	Ventura	Absp.	*12,000
Standard Gasoline Co.	Ventura	Absp.	40,000
Standard Gasoline Co.	Ventura	Absp.	40,000
Standard Gasoline Co.	Ventura	Booster	
Standard Gasoline Co.	Newhall	Absp.	*1,000
Standard Gasoline Co.	Taft	Absp.	30,000
Standard Gasoline Co.	Taft	Absp.	30,000
Standard Gasoline Co.	Taft	Absp.	6,000
Standard Gasoline Co.	Taft	Absp.	6,000
Standard Gasoline Co.	Taft	Absp.	*10,000
Standard Gasoline Co.	Taft	Absp.	7,500
Standard Gasoline Co.	Taft	Absp.	15,000
Standard Gasoline Co.	Taft	Booster	(*)
Standard Gasoline Co.	Taft	Absp.	*12,000
Standard Gasoline Co.	Taft	Absp.	*7,000
Standard Gasoline Co.	Wheeler Ridge	Absp.	*500
Standard Gasoline Co.	Kettleman Hills	Absp.	110,000
Standard Gasoline Co.	Kettleman Hills	Absp.	140,000
Standard Gasoline Co.	Kettleman Hills	Absp.	80,000
Standard Gasoline Co.	Kettleman Hills	Absp.	80,000
State Gasoline Corp., 900 Spring Arcade Bldg., Los Angeles	Long Beach	Absp.	15,000
State Gasoline Corp.	Long Beach	Absp.	22,500
State Gasoline Corp.	Long Beach	Absp.	*20,000
Superior Oil Co., 1100 Natl. City Bank Bldg., Los Angeles	Joughin lease, Torrance Field	Absp.	2,300
Superior Oil Co.	Kettleman Hills Field	Absp.	110,000
Texas Company, The (California)	Signal Hill	Absp.	75,000
Texas Company, The (California)	Long Beach	Absp.	15,000
Texas Company, The (California)	Santa Fe Springs	Absp.	100,000
Texas Company, The (California)	Huntington Beach	Absp.	8,000
Texas Company, The (California)	Montebello	Absp.	2,500
Texas Company, The (California)	Ventura	Comp.	12,000
Union Oil Co. of California, 617 W. Seventh St., Los Angeles	Ventura	Absp.	2,500
Union Oil Co. of California, 617 W. Seventh St., Los Angeles	Morse lease, Richfield Field	Absp.	20,000
Union Oil Co. of California, 617 W. Seventh St., Los Angeles	Stearns lease, Brea Field	Absp.	22,500
Union Oil Co. of California, 617 W. Seventh St., Los Angeles	Bell lease, Santa Fe Springs	Absp.	100,000
Union Oil Co. of California, 617 W. Seventh St., Los Angeles	Hellman lease, Dominguez Field	Absp.	50,000
Union Oil Co. of California, 617 W. Seventh St., Los Angeles	Rosecrans lease, Rosecrans Field	Absp.	27,000
Union Oil Co. of California, 617 W. Seventh St., Los Angeles	Santa Paula refinery, Santa Paula Field	Absp.	250
Union Oil Co. of California, 617 W. Seventh St., Los Angeles	Newlove lease, Santa Maria Field	Absp.	18,000
Universal Consolidated Oil Co., 716 Richfield Bldg., Los Angeles	Lost Hills Field	Absp.	*2,000
West Coast Refining Co., 1320 Pacific Finance Bldg., Los Angeles	Richfield	Absp.	50,000
Western Natural Gasoline Corp., Commercial Exchange Bldg., Los Angeles	Signal Hill	C-A	7,500
Western States Gasoline Corp., 609 S. Grand, Los Angeles	Sec. 2-22-17	Absp.	160,000
Wilshire Oil Co., Inc., 2455 E. 27th St., Vernon.	Santa Fe Springs	Absp.	110,000

COLORADO

Continental Oil Co., Denver, Colo.	Sec. 30-68w-8n	Absp.	1,000
Continental Oil Co., Denver, Colo.	Sec. 31-68w-10n	Absp.	6,000
Mountain States Oil Corp.	Barela, S. W.	Absp.	6,000

ILLINOIS

American Oil Development Co., 1414 Oliver Bldg., Pittsburgh, Pa.	Crawford County	Comp.	150
American Oil Development Co., 1414 Oliver Bldg., Pittsburgh, Pa.	Crawford County	Comp.	150
American Oil Development Co., 1414 Oliver Bldg., Pittsburgh, Pa.	Crawford County	Comp.	50
Arkansas Fuel Oil Co., Robinson	Sec. 3, Prairie Twp., Crawford	Comp.	2,000
Tide Water Oil Co., 17 Battery Place, New York, N. Y.	Crawford County	Comp.	1,300
Bell Bros., Robinson	Casey	Comp.	150
Bell Bros., Robinson	Robinson	Comp.	130
Big Four Oil & Gas Co., Pittsburgh, Pa.	Bridgeport	Comp.	300
Brenneman & MacDonell, Oblong	Sec. 6-6-13, Crawford County	Comp.	1,000
Brenneman & MacDonell, Oblong	Sec. 7-7-13, Crawford County	Comp.	250
International Oil & Gas Co., Washington, Pa.	Crawford County	Comp.	2,000
Kennedy, W. C., Co., Bradford, Pa.	Oblong	Comp.	235
Kewanee Oil & Gas Co., Robinson	Crawford	Comp.	150
Kewanee Oil & Gas Co., Robinson	Lawrence County	Comp.	150
Mahutska Oil Co., Robinson	Sec. 17-7-13	Comp.	250
Mahutska Oil Co., Robinson	Sec. 28-6-13	Comp.	250
Mahutska Oil Co., Robinson	Sec. 10-6-13	Comp.	1,000
Mahutska Oil Co., Robinson	Sec. 30-7-13	Comp.	500
Mallory & Crawford, Bradford, Pa.	Oblong, ½ mi. E	Comp.	110
Nolan & Lamberton, Box 1328, Tulsa, Okla.	Sec. 12-7-14, Crawford County	Comp.	50
Ohio Oil Co., Casey	Clark County	Comp.	124
Ohio Oil Co., Casey	Clark County	Comp.	241
Ohio Oil Co., Casey	Cumberland County	Comp.	1,150
Ohio Oil Co., Casey	Cumberland County	Comp.	437
Ohio Oil Co., Oblong	Crawford County	Comp.	405
Ohio Oil Co., Oblong	Crawford County	Comp.	242
Ohio Oil Co., Oblong	Crawford County	Comp.	310
Ohio Oil Co., Oblong	Crawford County	Comp.	243
Ohio Oil Co., Oblong	Crawford County	Comp.	756
Ohio Oil Co., Oblong	Crawford County	Comp.	100
Ohio Oil Co., Robinson	Crawford County	Comp.	342
Ohio Oil Co., Hardinville	Crawford County	Comp.	310
Ohio Oil Co., Hardinville	Crawford County	Comp.	833
Ohio Oil Co., Stoy	Crawford County	Comp.	200
Ohio Oil Co., Stoy	Crawford County	Comp.	1,130
Ohio Oil Co., Lawrenceville	Lawrence County	Comp.	*270
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	1,170
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	570
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	579
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	1,800
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	1,190
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	990
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	1,000
Ohio Oil Co., Lawrenceville	Lawrence County	Comp.	500
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	1,050
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	1,050
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	350
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	*390
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	1,400
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	1,500
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	1,500
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	390
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	1,200
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	375
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	1,140
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	*770
Ohio Oil Co., Bridgeport	Lawrence County	Comp.	*450
Snowden & McSweeney Co., Bridgeport	E half SE, Sec. 17-3-12w	Topping	1,000
Splane, W. W., Oil City, Pa.	Robinson	Comp.	300
Stranahan & Cheuvront, 405 W. Main St., Oblong	Sec. 11-7-13	Comp.	15
Stranahan & Cheuvront, 405 W. Main St., Oblong	Sec. 22-6-13	Comp.	25
Stranahan & Cheuvront, 405 W. Main St., Oblong	Sec. 25-7-13	Comp.	30
Vacuum Gasoline Co., Lawrenceville	Lawrence County	Comp.	5,000
Vincennes Oil & Gas Co., Vincennes, Ind.	Lawrence County	Comp.	5,000

KANSAS

Altitude Petroleum Co., Kennedy Bldg., Tulsa, Okla.	Chanute	Comp.	2,000
Barnsdall Oil Co., Route 2, Box 173, Oxford†	W half NW, Sec. 20-33-3	Absp.	20,000
Empire Oil & Refining Co., Caney	SW, Sec. 13-35-13	Absp.	*10,000
Empire Oil & Refining Co., Arkansas City	SE, Sec. 13-34-3	Absp.	*15,000

Company and plant address—	Field location—	Type of plant	Daily cap'y (gals.)
Empire Oil & Refining Co., Teterville	SW. Sec. 16-23-9	Absp.	10,000
Empire Oil & Refining Co., Madison	NW, Sec. 8-23-11	Absp.	9,000
Empire Oil & Refining Co., Thrall	SE half, Sec. 29-23-10	Comp.	7,500
Empire Oil & Refining Co., Wellington	SW, Sec. 17-32-1	Absp.	*12,000
Empire Oil & Refining Co., Madison	NE, Sec. 14-22-11	C-A	4,000
Empire Oil & Refining Co., Wichita	NW, Sec. 17-28-1	Absp.	40,000
Kansas Gas & Gasoline Co., McPherson	McPherson County	Absp.	15,000
Kansas Gas & Gasoline Co., Medicine Lodge	Barber County	Absp.	10,000
Kansas Gasoline Co., Box 1007, Winfield	Lewis farm, Sec. 24-32s-4e	Absp.	5,000
McPherson Oil & Gas Development Co., United Life Bldg., Salina	SW, Sec. 29-18-2w	Absp.	10,000
Pep Gasoline Co.	Sedan, 2 mi. E	Comp.	1,800
Phillips Petroleum Co., Phillips Bldg., Bartlesville, Okla.	NE SE, Sec. 10-23-9	Absp.	*6,000
Phillips Petroleum Co., Phillips Bldg., Bartlesville, Okla.	NE NW, Sec. 12-22-10	Comp.	6,000
Shell Petroleum Corp., Oxford	SE, Sec. 25-31s-2e	Absp.	5,000
Sinclair Oil & Refining Co., Box E, Kenbro	SW, Sec. 20-22-10e	Comp.	7,004
Union Gasoline Co., Independence	S of Caney	Absp.	*2,000
Texas Co., The (Delaware), O'Brien Switch	Sec. 31-30n-6e	Absp.	12,400
Texas Co., The (Delaware), Gordon	Sec. 28-26n-5e	Absp.	6,000
Union Gasoline Co., Caney	Sec. 28-29-13, Washington County	Absp.	5,000
Washington Development Co., Wellington	Sec. 24-32s-1w	Absp.	*10,000

†Owned jointly with Continental Oil Co.

KENTUCKY

Coast Oil Co., Monticello	Monticello	Comp.	*500
Heck, W. B., & Co., Box 164, Owensboro, Ky.	Monticello	Comp.	*300
Kentucky Pipe Line Co., 311 W. Chestnut St., Louisville	Clark County	Char.	2,500
Louisville Gas & Electric Co.	Winchester	Char.	2,500
Virginian Gasoline & Oil Co., Kermit, W. Va.	Martin County	Absp.	10,000
Virginian Gasoline & Oil Co., Catlettsburg	Boyd County	Absp.	24,000

LOUISIANA

Arkansas Fuel Oil Co., Homer	Sec. 24-21n-8w, Claiborne	Comp.	2,000
Arkansas Natural Gas Corp., Monroe	Sec. 36-18n-4e, Ouachita	Absp.	*8,000
Century Carbon Co., Monroe	Swartz	Absp.	3,000
Century Carbon Co., Monroe	Maugham	Absp.	10,000
Columbian Gasoline Corp., R.F.D., Rayville	Sec. 10-16n-6e, Richland	Absp.	16,000
Columbian Gasoline Corp., Swartz	Sec. 5-18n-5e, Ouachita	Absp.	5,000
Columbian Gasoline Corp., Fairbanks	Sec. 37-19n-4e, Ouachita	Absp.	*4,000
Columbian Gasoline Corp., Fairbanks	Sec. 2-18n-4e, Ouachita	Absp.	8,000
Columbian Gasoline Corp., R.F.D. 2, Bastrop	Sec. 37-20n-5e, Morehouse	Absp.	*3,500
Columbian Gasoline Corp., R.F.D. 2	Sec. 19-20n-5e, Morehouse	Absp.	3,000
DeSota Gasoline Co.	Mansfield	Comp.	980
Gulf Refining Co. of Louisiana, Mooringsport	Caddo	Comp.	8,000
Gulf Refining Co. of Louisiana, Mooringsport	Homer	Absp.	10,000
Herkness, J. Smylie, R.F.D. 3, Bastrop	Morehouse Parish	Absp.	*1,000
Huber, J. M., Co. of Louisiana, Inc., Swartz	Sec. 5-18n-5e	Absp.	6,000
Louisiana Gas & Fuel Co.	Alto	Absp.	35,000
Louisiana Gas & Fuel Co.	Uscarco	Absp.	4,000
Louisiana Oil Refining Corp., Ardis Bldg., Shreveport	Sec. 28, Webster Parish	Absp.	20,000
Magnolia Petroleum Co., Harmon	Sec. 12-12-11, Red River	Absp.	1,500
Magnolia Petroleum Co., Gilliam	Sec. 24-21n-15w, Caddo	Absp.	*1,300
Monroe-Louisiana Carbon Co., Swartz	Secs. 28 and 33-19n-5e Ouachita Parish	Char.	*2,000
Ohio Oil Co., Haynesville	Claiborne Parish	Absp.	9,400
Ohio Oil Co., Treat	Webster Parish	Absp.	10,000
Phillips Petroleum Co., Homer	W half SW, Sec. 19-21-7	Comp.	10,500
Reserve Natural Gas Co. of Louisiana, Shreveport	Sec. 10-17n-14w, Caddo	Absp.	*10,000
Southwestern Gas & Electric Co., Oil City	Oil City	Comp.	450
Standard Oil Co. of Louisiana, Trees	Caddo Field, near Trees	Absp.	7,000
Standard Oil Co. of Louisiana, Homer	Claiborne Field, near Homer	Absp.	5,500
Stanolind Oil & Gas Co., Gilliam	Gilliam	Absp.	3,000
Texas Company, The (Delaware), Oil City	Sec. 3-20n-16w, Caddo	Comp.	4,000
Texas Company, The (Delaware), Oil City	Sec. 23-21n-15w, Caddo	Absp.	*13,800
Texas Company, The (Delaware), Mooringsport	Sec. 19-20n-15w, Caddo	Comp.	*600
Texas Company, The (Delaware), Naborton	Sec. 34-13n-12w, De Soto	Comp.	*4,000
Union Gas Products, Inc., 710 Ouachita Bank Bldg., Monroe	Near Swartz	C-A	6,000
United Carbon Co., Monroe	Sec. 10-16-6	Absp.	9,000
United Carbon Co., Monroe	Sec. 17-20-5	Char.	*5,000
United Carbon Co., Monroe	Sec. 13/24-21-5	Char.	*2,000
United Carbon Co., Monroe	Sec. 5-18-5	Absp.	4,000
United Gas Public Service Co., Alto	Sec. 16-16n-6e, Richland	Absp.	50,000
United Gas Public Service Co., Bastrop	Sec. 31-20n-5e, Morehouse	Absp.	*1,300
United Gas Public Service Co., Cotton Valley	Sec. 21-21n-10w, Webster	Absp.	*20,000
United Gas Public Service Co., Cotton Valley	Sec. 17-21n-10w, Webster	Absp.	50,000
United Gas Public Service Co., Pine Island	Sec. 24-21n-15w, Caddo	Absp.	*3,000
United Gas Public Service Co., Sarepta	Sec. 30-22n-10w, Webster	Absp.	*12,000
United Gas Public Service Co., Swartz	Sec. 32-19n-5e, Ouachita	Absp.	*2,500
United Gas Public Service Co., Sugar Creek†	Sec. 6-19n-6e, Claiborne	Absp.	30,000

†Owned jointly with Sugar Creek Syndicate.

NEW MEXICO

Phillips Petroleum Co., Artesia	SW NW, Sec. 16-18-28	Absp.	*9,000
Phillips Petroleum Co., Hobbs	N. half NW, Sec. 4-19-38	Absp.	40,000
Shell Petroleum Corp., Hobbs†	SW, Sec. 19-18s-38e	Absp.	30,000

†Owned jointly with Continental Oil Co.

NEW YORK

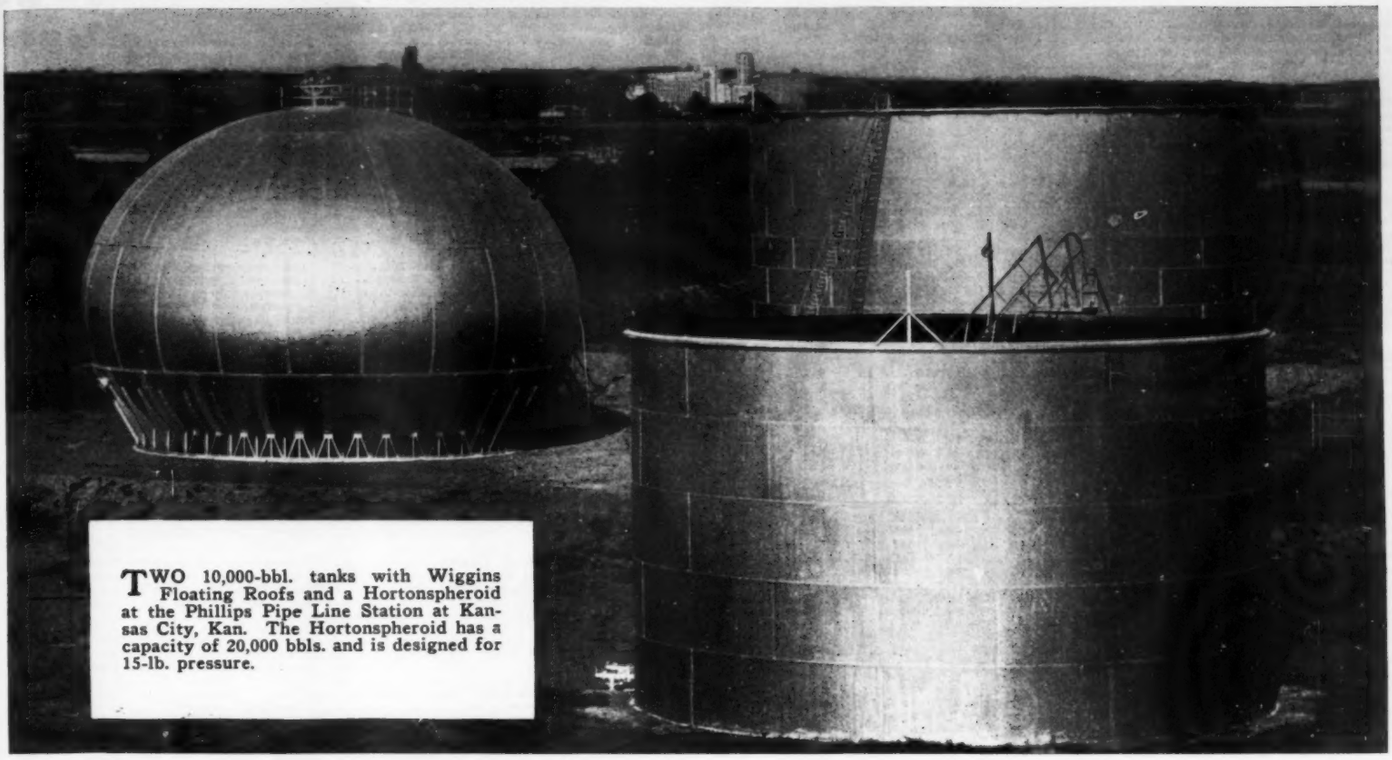
Empire Gas & Fuel Co., Andover	Lot 55, Andover Twp.	Absp.	*400
Producers Gas Co., Olean	Genessee Twp., Allegany	Absp.	*1,000
Wirt Gasoline Co., Bradford, Pa.	Richburg	Comp.	*500

OHIO

American Oil Development Co., Pittsburgh, Pa.	Monroe County	Comp.	500
American Oil Development Co., Pittsburgh, Pa.	Monroe County	Comp.	200
Hope Construction & Refining Co., Fly	Fly	Comp.	300
Hope Construction & Refining Co.	New Matamoras	Comp.	200
Hope Construction & Refining Co.	New Matamoras	Absp.	1,200
Jefferson Gasoline Co., Ryland	Sec. 27, Wells Twp.	Comp.	250
Muskingum Oil Co., Sistersville, W. Va.	Perry Twp., Monroe County	Comp.	*1,000
Norris, Mrs. Jennie, Parkersburg, W. Va.	Sec. 11, Newport Twp., Washington County	Comp.	100
Ohio Producing & Refining Co. (The)	Sec 22, Chippewa Twp., Wayne County	Char.	6,000
Preston Oil Co., Homer	Burlington Twp., Licking County	Absp.	15,000
Preston Oil Co., Pavonia	Weller Twp., Richland County	Absp.	15,000
Preston Oil Co., Sugar Grove	Berne Twp., Fairfield County	Absp.	15,000
Preston Oil Co., Caldwell	Caldwell	Absp.	3,000
Preston Oil Co., Pomeroy	Sutton Twp., Meigs County	Absp.	*2,000
Preston Oil Co., Zanesville	Wayne Twp., Muskingum County	Absp.	*2,000
Preston Oil Co., Medina	York Twp., Medina County	Absp.	*3,000
Reno Oil Co., Sistersville, W. Va.	Monroe County	Comp.	55
River Gas Co.	New Matamoras	Absp.	125
Southern Oil Co., Schley	Archers Fork	Comp.	150
Southern Oil Co., Southern Valley	Sycamore Valley	Comp.	50
Tuel & Thoenen	Fly, 2 mi. SW	Comp.	200
Tyler Oil Co., Sistersville, W. Va.	Monroe County	Comp.	41

OKLAHOMA

Company and plant address—	Field location—	Type of plant	Daily cap'y (gals.)
Akin Gasoline Co., Box 1402, Tulsa	Dewey	Comp.	1,000
Akin Gasoline Co., Box 1402, Tulsa	Bixby	Comp.	1,000
Altitude Petroleum Corp., Kennedy Bldg., Tulsa	Oilton	Comp.	*5,000
Amerada Petroleum Corp., Box 596, Ardmore	W half SE, Sec. 20-5s-1e	Absp.	*1,500
Amerada Petroleum Corp., Box 686, Healdton	SE Sec. 31-2s-2w	Absp.	5,890
Amerada Petroleum Corp., Box 1028, Okmulgee	NE NE, Sec. 13-12n-11e	Comp.	*2,000
Amerada Petroleum Corp., Box 92, Earlsboro	Sec. 16-9n-5e	Absp.	*10,000
Amerada Petroleum Corp., Harjo	N half W half NE, Sec. 7-8n-5e	Absp.	19,000
Amerada Petroleum Corp., Box 92, Earlsboro	SW NW, Sec. 17-9n-5e	Absp.	9,000
Amerada Petroleum Corp., R.F.D. 8, Oklahoma City	SE, Sec. 30-11n-2w	Comp.	4,000
Barco Gasoline Co., Wirt	Healdton Field	Comp.	3,000
Barnsdall Oil Co., Box 224, Avant	SE, Sec. 18-23-12	Absp.	40,000
Barnsdall Oil Co., Box 518, Earlsboro	NE NE, Sec. 15-9-5	Absp.	2,500
Barnsdall Oil Co., Box 2039, Tulsa	SE, Sec. 5-20-12	Absp.	2,500
Barnsdall Oil Co., Route 1, Barnsdall	NW NW, Sec. 29-25-11	Absp.	4,000
Barnsdall Oil Co., Box 228, Osage	SW SW, Sec. 20-21-9	Absp.	2,500
Barnsdall Oil Co., Box 856, Beggs	N half NE, Sec. 6-14-12	Absp.	8,000
Bartlett Gasoline Co., 313 Wright Bldg., Tulsa	Sec. 23-14-19	Absp.	14,000
Bell Oil & Gas Co., Tulsa	Mounds	Absp.	*1,500
Bell Oil & Gas Co., Tulsa	Wynona	Absp.	*1,000
Bell Oil & Gas Co., Tulsa	Stone Bluff	Absp.	*1,000
Carter Oil Co., Box 801, Tulsa	Sec. 23-4s-2w	Absp.	6,000
Carter Oil Co., Box 801, Tulsa	Sec. 9-26n-6e	Absp.	12,000
Carter Oil Co., Box 801, Tulsa	Sec. 3-10n-6e	Absp.	16,000
Carter Oil Co., Box 801, Tulsa	Sec. 15-9n-6e	Absp.	50,000
Carter Oil Co., Box 801, Tulsa	Sec. 14-7n-6e	Absp.	16,000
Coline Gasoline Corp.	Oklahoma City	Absp.	40,000
Comar Gasoline Co., Tonkawa	NE, Sec. 2-24n-1w	Absp.	30,000
Comar Oil Co., Blackwell	SW, Sec. 21-29n-1w	Absp.	10,000
Comar Oil Co., Blackwell	NW, Sec. 5-28n-1w	Absp.	10,000
Cosden, J. S., Inc., Fort Worth, Tex.	Sec. 31-19n-4w	Absp.	*50,000
Cosden, J. S., Inc., Fort Worth, Tex.	Sec. 19-11n-11e	Comp.	1,000
Cromwell-Franklin Oil Co., Oklahoma City	SE SW SE, Sec. 12-11n-3w	Absp.	30,000
Crosbie & Moran, Inc., Box 715, Earlsboro	NE NE, Sec. 2-9-5	Absp.	*20,000
Crosbie & Moran, Inc., Box 247, Marshall	NW, Sec. 20-19-4	Comp.	2,000
Crosbie & Moran, Inc., Box 1727, Konawa	SE SE, Sec. 8-6-6	C-A	15,000
Crosbie & Moran, Inc., Box 84, Pearson	S½ S½ NE, Sec. 15-7-4	C-A	20,000
Crosbie & Moran, Inc., Holdenville	NW NW Sec. 15-7-8	C-A	29,000
Crosbie, Porter & Martin, Box 625, Okemah	SW SE, Sec. 29-12-10	Absp.	20,000
Deep Rock Oil Corp., Shamrock	Sec. 4-16-7	Absp.	5,000
Deep Rock Oil Corp., Kellyville	Sec. 17-17-11	Comp.	4,000
Deep Rock Oil Corp., Mehan	Sec. 23-18-3	Absp.	8,000
Deep Rock Oil Corp., Cushing	Sec. 9-18-10	Absp.	4,000
De Soto Gasoline Co., Muskogee	Sec. 5-14-18	Comp.	366
Devonian Oil Co., Tulsa, Okla.	NE, Sec. 32-7n-6w	Absp.	*3,000
Devonian Oil Co., Tulsa, Okla.	SE, Sec. 22-17n-10e	Absp.	*20,000
Devonian Oil Co., Tulsa, Okla.	SE, Sec. 22-20n-12e	Absp.	*5,000
Eagle-Picher Mining & Smelting Co., Henryetta, Okla.	Sec. 6-11n-13e	Absp.	8,000
Eason Oil Co., Enid	NE, 24-22-4w	Comp.	2,000
Eason Oil Co., Enid	SW, 34-17-4w	C-A	12,000
Empire Oil & Refining Co., Tallant	SE, Sec. 35-25-10	Absp.	20,000
Empire Oil & Refining Co., Seminole	SE, Sec. 24-9-6	Absp.	25,000
Empire Oil & Refining Co., Seminole	NE, Sec. 34-9-6	Absp.	*20,000
Empire Oil & Refining Co., Seminole	SW, Sec. 14-8-6	C-A	20,000
Empire Oil & Refining Co., Seminole	NE, Sec. 11-8-5	Absp.	25,000
Empire Oil & Refining Co., Konawa	NW, Sec. 9-6-6	Absp.	20,000
Empire Oil & Refining Co., Asher	NE, Sec. 22-6-3	Absp.	30,000
Empire Oil & Refining Co., Konawa	NE, Sec. 29-6-6	Absp.	*10,000
Enfisco Oil Corp., Box 2021, Tulsa	NE, Sec. 17-17-13, Bixby	Comp.	1,500
Foster & Norwood Oil Co., Bartlesville	Barnsdall	Absp.	4,900
Franklin, Wirt, Petroleum Corp., Cromwell-Franklin and I.T.L.O. Co., Oklahoma City	NW NW, Sec. 12-11n-3w	Absp.	25,000
Grimes, Charles W., and Park T., Box 322, Tulsa	Sec. 35-20-9	Comp.	1,000
Grimes, Otha H., and Roy O. Neal, Drumright	Sec. 17-17-7, Creek County	Absp.	3,400
Grimes Gasoline Co., Tulsa	Okemah	Absp.	5,000
Grimes Gasoline Co., Tulsa	Keystone	Absp.	1,500
Grimes, O. H. and P. W., Tulsa	Weleetka	Comp.	1,500
Grimes, C. W. and O. H., Tulsa	Weleetka	Absp.	5,000
Gypsy Oil Co., Box J, Kiefer	N half SW, Sec. 16-17-12	Comp.	12,500
Gypsy Oil Co., Box 128, Drumright	E half NE, Sec. 5-17-7	Comp.	*3,300
Gypsy Oil Co., Box 128, Drumright	NE SW, Sec. 10-16-7	Comp.	*2,400
Gypsy Oil Co., Box 338, Cleveland	SE, Sec. 1-21-7	Comp.	2,400
Gypsy Oil Co., Route 2, Kaw City	NW, Sec. 24-27-5e	Absp.	12,000
Gypsy Oil Co., Box 1513, Three Sands	NW, Sec. 2-24-1w	Absp.	*4,900
Gypsy Oil Co., Box 128, Drumright	NE, Sec. 2-14-2e	Absp.	2,600
Gypsy Oil Co., Box 128, Drumright	NW, Sec. 11-14n-5e	Absp.	*3,500
Gypsy Oil Co., Box 967, Seminole	SE SW, Sec. 14-7n-6e	Absp.	8,000
Gypsy Oil Co., Box 967, Seminole	SE NW, Sec. 7-8-6e	Absp.	15,000
Harland Oil Co., Wolco, Okla.	SW, Sec. 20-25-11	Absp.	1,200
Harland Oil Co., Wolco, Okla.	NE, Sec. 25-24-11	Absp.	1,200
Indian Territory Illuminating Oil Co., Oklahoma City	SE, Sec. 24-11-3	Absp.	20,000
Indian Territory Illuminating Oil Co., Oklahoma City	SW, Sec. 19-11-2	Absp.	20,000
Indian Territory Illuminating Oil Co., Oklahoma City	SE, Sec. 13-11-3	Absp.	20,000
Indian Territory Illuminating Oil Co., Oklahoma City	NW, Sec. 31-11-2	Absp.	20,000
Indian Territory Illuminating Oil Co., Oklahoma City	SE, Sec. 11-11-3	Absp.	20,000
Lebow (C. H.), Drumright	Sec. 8-17n-7e	Absp.	1,800
Magnolia Petroleum Co., Yale	NE SW, Sec. 6-19n-6e	Absp.	4,500
Magnolia Petroleum Co., Oilton	NE, Sec. 7-18n-7e	Absp.	9,500
Magnolia Petroleum Co., Shamrock	SW, Sec. 3-16n-7e	Absp.	8,250
Magnolia Petroleum Co., Davenport	SW, Sec. 34-15n-5e	Absp.	3,750
Magnolia Petroleum Co., Earlsboro	NW NW SE, Sec. 10-9n-5e	Absp.	*6,000
Magnolia Petroleum Co., St. Louis	NW SW SE, Sec. 15-7n-4e	Absp.	13,000
Magnolia Petroleum Co., Wewoka	W 7.65 ac., Lot 4, Sec. 32-8n-8e	Absp.	5,750
Magnolia Petroleum Co., Duncan	NW NW, Sec. 19-1s-8w	Comp.	*600
Magnolia Petroleum Co., Graham	SE SE SE, Sec. 23-2s-3w	Absp.	5,000
Masoneal Gasoline Co., Box 516, Tulsa	Sec. 23-21n-8e	Comp.	1,500
Midco Oil Corp., Tulsa	Billings, 8 mi. S	Comp.	*20,000
Midco Oil Corp., Tulsa	Dewey	Comp.	*10,000
Midco Oil Corp., Tulsa	Drumright	Comp.	5,000
Midco Oil Corp., Tulsa	Oilton	Comp.	10,000
Mid-Continent Petroleum Corp., Tulsa	SE SE, Sec. 22-17-7	Absp.	9,000
Mid-Continent Petroleum Corp., Tulsa	E half NW, Sec. 5-16-15	Comp.	1,500
Mid-Continent Petroleum Corp., Tulsa†	SE, Sec. 13-22-4w	Absp.	1,000
Mid-Continent Petroleum Corp., Tulsa	SW, Sec. 12-13-13	Absp.	900
Mid-Continent Petroleum Corp., Tulsa	NE SW, Sec. 15-10-8	Absp.	1,100
Mid-Continent Petroleum Corp., Tulsa	S half SE, Sec. 28-17-14	Comp.	300
Mid-Continent Petroleum Corp., Tulsa	W half NW, Sec. 17-9-8	Absp.	1,300
Mid-Continent Petroleum Corp., Tulsa	NW, Sec. 9-15-6	Absp.	800
Mid-Continent Petroleum Corp., Tulsa	NW, Sec. 28-20-12	Absp.	600
Mid-Kansas Oil & Gas Co., Thompson Bldg., Tulsa	Sec. 27-16-9, Creek County	C-A	10,000
Moon Gasoline Co., Tulsa	Muskogee	Comp.	500
Moon Gasoline Co., Tulsa	Bixby	Comp.	1,500
National Products Co., 1510 Commonwealth Bldg., Pittsburgh, Pa.	Oilton	Absp.	1,200
National Products Co., 1510 Commonwealth Bldg., Pittsburgh, Pa.	Slick	Absp.	1,200
National Products Co., 1510 Commonwealth Bldg., Pittsburgh, Pa.	Slick	Absp.	1,600
National Products Co., 1510 Commonwealth Bldg., Pittsburgh, Pa.	Slick	Absp.	1,400
Neal Gasoline Co., Osage	Sec. 13-21-8	Absp.	4,000
Neal Gasoline Co., Copan	Sec. 32-28-13	Absp.	*1,200
Oil State Gasoline Co.	NE, Sec. 7-18n-13e	Comp.	2,500
Oil State Gasoline Co., Jenks	NE, Sec. 13-19n-5e	Comp.	2,000
Oklahoma Gasoline Plants, Inc., Drumright	Sec. 18-18-7e	Absp.	8,000
Orfic Gasoline Production Co., Tulsa	Cleveland	Comp.	2,000



TWO 10,000-bbl. tanks with Wiggins Floating Roofs and a Hortonspheroid at the Phillips Pipe Line Station at Kansas City, Kan. The Hortonspheroid has a capacity of 20,000 bbls. and is designed for 15-lb. pressure.

How do you figure the cost of storing natural gasoline?

DO you divide the cost of a storage tank by the capacity and consider that "cost per barrel" as the true index of storage costs?

Or do you divide an estimated annual charge by an estimated throughput of a tank and take the resulting unit cost as reliable?

These methods—and others—omit one very important factor in the cost of storing so volatile a product as natural gasoline. A tank that seems economical when evaporation loss is ignored may really be prohibitively expensive when this waste is added to the cost.

Hortonspheres or Hortonspheroids are not "expensive" equipment. Any difference in first cost as compared with ordinary air-leaky storage tanks is far more than offset by the value of the product saved by these evaporation-stopping storage units.

Hortonspheres and Hortonspheroids

Spherical or spheroidal shapes are ideal for pressure containers. Since an increase in pressure may be the simplest method of overcoming excessive volatilization, these types are commonly adopted for storing products that boil at atmospheric pressure.

Hortonspheres are usually built to withstand pressures of 25 lbs. and over. They are designed for holding either gas or liquid. The standard capacities for liquids are 5000, 7500 and 10,000 bbls.

Hortonspheroids are built in capacities from 5,000 to 80,000 bbls. The smaller ones are usually designed to withstand pressures of 10 or 15 lbs., and the larger ones for 1 to 5 lbs. Even such low pressure is sufficient to prevent evaporation loss in natural gasoline through a wide range of temperatures.

Wiggins Pontoon Roofs

For all products which remain liquid at atmospheric pressure through normal temperature ranges, the Wiggins Pontoon Roof is an economical means of preventing evaporation loss. Floating directly on the surface of the liquid, it effectively prevents the mixture of air and vapor under the roof and the escape of these valuable vapors to the atmosphere.

We have specialized in evaporation prevention problems and can offer a complete service in the application of equipment to meet any requirement. There is no obligation in discussing your conditions with us. Address our nearest office.

CHICAGO BRIDGE & IRON WORKS

DALLAS	1241 Burt Bldg.	CHICAGO	2128 Old Colony Bldg.	PHILADELPHIA	1615-1700 Walnut St. Bldg.
HOUSTON	2919 Main Street	DETROIT	1514 Lafayette Bldg.	BOSTON	1517 Consolidated Gas Bldg.
TULSA	1406 Philcade Bldg.	CLEVELAND	2204 Midland Bldg.	SAN FRANCISCO	1054 Rialto Bldg.
BIRMINGHAM	1536 N. Fiftieth St.	NEW YORK	3147 Hudson Terminal Bldg.	LOS ANGELES	1423 Wm. Fox Bldg.

Fabricating plants in BIRMINGHAM, CHICAGO and GREENVILLE, PA.

Company and plant address—	Field location—	Type of plant	Daily cap'y (gals.)
Peppers Gasoline Co., Enid	Enid	Absp.	5,000
Phillips Petroleum Co., Bartlesville	W half SW, Sec. 32-27-6	Absp.	42,000
Phillips Petroleum Co., Bartlesville	NW SW, Sec. 32-11-2w	Absp.	40,000
Phillips Petroleum Co., Bartlesville	NW SW, Sec. 33-11-8	Absp.	37,500
Phillips Petroleum Co., Bartlesville	NE NE, Sec. 26-27-5	Absp.	45,000
Phillips Petroleum Co., Bartlesville	SE NW, Sec. 24-11-11	Absp.	17,000
Phillips Petroleum Co., Bartlesville	NW NW, Sec. 23-7-6	Absp.	25,000
Phillips Petroleum Co., Bartlesville	S half, Sec. 1-11-3	Absp.	60,000
Phillips Petroleum Co., Bartlesville	SW NW, Sec. 12-25-11	Absp.	5,000
Phillips Petroleum Co., Bartlesville	SE SE, Sec. 6-24-10	Absp.	14,000
Phillips Petroleum Co., Bartlesville	SW NW, Sec. 33-8-8	Absp.	40,000
Phillips Petroleum Co., Bartlesville	N half NW, Sec. 3-9-9	Absp.	50,000
Powers, M. F., Depew	Sec. 5-16-8	Absp.	3,500
Powers, M. F., Hazel	Sec. 30-7-5	Absp.	*1,000
Powers & Quinlan, Box 696, Beggs	SW NE, Sec. 2-14-12	Comp.	1,000
Powers & Quinlan, Box 696, Beggs	SW SE, Sec. 5-14-12	Comp.	500
Powers & Quinlan, Box 696, Beggs	Sec. 22-13-14	Comp.	500
Pure Oil Co., Drumright	Sec. 32-18n-7e	Comp.	3,100
Pure Oil Co., Oilton	Sec. 32-19n-7e	Comp.	1,700
Pure Oil Co., Healdton	Sec. 11-4s-3w	Comp.	1,000
Pure Oil Co., Depew	Sec. 5-15n-8e	Comp.	1,400
Pure Oil Co., Seminole	Sec. 26-9n-6e	Comp.	5,000
Reserve Petroleum Co., Box 338, Barnsdall	Barnsdall	Absp.	2,500
Sand Springs Home, Gasoline Department, Sand Springs	Sec. 4-18-7	Comp.	*3,000
Shell Petroleum Corp., Three Sands	NW, Sec. 2-24n-1w	Absp.	10,000
Shell Petroleum Corp., Braman	SW, Sec. 21-29n-1w	Absp.	8,000
Shell Petroleum Corp., Braman	NW, Sec. 5-28n-1w	C-A	4,000
Shell Petroleum Corp., Stroud	SE, Sec. 1-14n-6e	Absp.	*5,000
Shell Petroleum Corp., Yale	NW, Sec. 18-19n-6e	Absp.	*2,000
Shell Petroleum Corp., Drumright	NE, Sec. 8-17n-7e	Absp.	6,000
Shell Petroleum Corp., Maud	SE, Sec. 7-8n-5e†	Absp.	7,000
Shell Petroleum Corp., Marshall	SE, Sec. 19-19n-4w	Absp.	12,000
Shell Petroleum Corp., Oklahoma City	NE, Sec. 30-11n-2w	Absp.	*12,000
Shell Petroleum Corp., Seminole	SE, Sec. 16-8n-6e	Absp.	*5,000
Signal Oil & Gas Co., Inc.	Bristow	Absp.	5,000
Silurian Oil Co., Missouri Pacific Bldg., St. Louis	Avant	Comp.	1,200
Sinclair Oil & Gas Co., Box 68, Cleveland	S half SW, Sec. 35-21-8	Comp.	4,000
Sinclair Oil & Gas Co., R.F.D. 1, Drumright	SW SW, Sec. 28-18-7	Comp.	9,000
Sinclair Oil & Gas Co., Box 578, Shamrock	SW SE, Sec. 28-17-7	Comp.	12,000
Sinclair Oil & Gas Co., Box 368, Covington	W half SW, Sec. 19-22-3	Absp.	20,000
Sinclair Oil & Gas Co., Box 6, Shidler	SW SE, Sec. 29-27-6	Absp.	30,000
Sinclair Oil & Gas Co., Box 368, Cromwell	NE, Sec. 4-10-8	Comp.	12,000
Sinclair Oil & Gas Co., Box 865, Seminole	NW NW, Sec. 35-9-6	Absp.	70,000
Sinclair Oil & Gas Co., Box 787, Seminole	SW NE, Sec. 10-8-6	Absp.	60,000
Sinclair Oil & Gas Co., Box 163, Pearson	SW, Sec. 24-7-4	Absp.	30,000
Sinclair Oil & Gas Co., Box 337, Capitol Hill, Oklahoma City	SE NW, Sec. 30-11-2	Absp.	50,000
Sinclair Oil & Gas Co., Box 297, Sasakwa	W half, Sec. 7-6-8	Comp.	20,000
Sinclair Oil & Gas Co., Box 1106, Seminole	NE NW, Sec. 19-9-6	Comp.	50,000
Skelly Oil Co., Box 536, Seminole	SW NW, Sec. 6-9n-6e	C-A	13,000
Skelly Oil Co., Box 536, Seminole	SW, Sec. 17-9n-6e	Absp.	10,900
Skelly Oil Co., Box 157, Lyman	NW, Sec. 11-27n-5e	Absp.	15,000
Skelly Oil Co., Maramec	NW SW NW, Sec. 15-20n-6e	Absp.	3,000
Skelly Oil Co., Box 168, Slick	NW cor., Sec. 15-15n-10e	Absp.	3,500
Skelly Oil Co., Box 413, Wynona	N half SW, Sec. 24-24n-9e, Osage County	Absp.	4,500
Southland Gasoline Co., Tulsa	Sec. 33-19-7, Creek County	Absp.	2,000
Southwest Production Co., Bristow	Sec. 20-16-9, Creek County	Comp.	2,000
Stanolind Oil & Gas Co., 910 S. Michigan Ave., Chicago, Ill.	Drumright	Comp.	20,000
Stanolind Oil & Gas Co., 910 S. Michigan Ave., Chicago, Ill.	Three Sands	Absp.	10,000
Sterling Oil & Gas Co., Tulsa	SE, Sec. 1-21-11	Absp.	150
Superior Oil Corp., 315 Exchange Natl. Bank Bldg., Tulsa	NE, Sec. 2-9n-5e	Comp.	*10,000
Superior Oil Corp., 315 Exchange Natl. Bank Bldg., Tulsa	NW, Sec. 8-9-5	Comp.	*10,000
Test Oil Co., Bartlesville	Sec. 30-27-14	Comp.	*500
Texas Company, The (Delaware), Kiefer	Sec. 8-17n-12e	Comp.	13,900
Texas Company, The (Delaware), Haskell	Sec. 22-15n-14e	Comp.	*6,800
Texas Company, The (Delaware), Preston	Sec. 11-14n-12e	Comp.	*1,500
Texas Company, The (Delaware), Davenport	Sec. 2-14n-5e	Absp.	12,200
Texas Company, The (Delaware), Beggs	Sec. 22-15n-11e	Absp.	*4,500
Texas Company, The (Delaware), McInnis	Sec. 30-25n-8e	Absp.	5,000
Texas Company, The (Delaware), Jenks	Sec. 2-18n-12e	Comp.	*800
Texas Company, The (Delaware), Maude	Sec. 7-8n-5e†	Absp.	25,000
Tide Water Oil Co. (Okla.), Philcade Bldg., Tulsa	Sec. 8-17n-7e	Absp.	15,000
Victor Gasoline Co., Drumright	Sec. 8-17-7	C-A	*3,000
Victor Gasoline Co., Bristow	Sec. 27-16-9	Absp.	5,000
Victor Gasoline Co., Bristow	Sec. 8-16-8	Comp.	1,000
Victor Gasoline Co., Davenport	Sec. 3-14-5	Absp.	*800
Victor Gasoline Co., Seminole	Sec. 10-9-6	Absp.	*1,500
Victor Gasoline Co., Seminole	Sec. 11-8-6	Absp.	5,000
Victor Gasoline Co., Lima	Sec. 5-7-7	Absp.	*21,000
Warner-Caldwell Oil Co., Titusville, Pa.	Nowata, Claggett Dist.	C-A	*500
Warner-Caldwell Oil Co., Titusville, Pa.	Nowata, Salt Creek Dist.	Absp.	500
Warner-Caldwell Oil Co., Titusville, Pa.	Nowata, Big Creek Dist.	Comp.	1,000
Warner-Caldwell Oil Co., Titusville, Pa.	Nowata, Adair Pool	C-A	*200
Wentz, L. H., Oil Division, Ponca City	Sec. 34-25n-1w	Absp.	2,000
Wentz, L. H., Oil Division, Ponca City	Sec. 17-28n-1e	Absp.	2,500
Western Gasoline Corp., Box 198, Tulsa	Sec. 24-17n-10e	Absp.	4,500
Westoak Gasoline Co., Box 507, Sayre	SE SW, Sec. 21-9-23w	Absp.	10,900
Wilcox, H. F., Oil & Gas Co., Tulsa	Sec. 2-15-8	Absp.	1,200
Wirt Franklin Petroleum Corp., Ardmore	NW, Sec. 12-11n-3w	Absp.	20,000
Wiser Oil Co., Bartlesville	Sec. 31-25-17e	Comp.	2,000
Wolverine Petroleum Corp., Avant	NE, Sec. 12-23n-11e	Comp.	1,500
Wolverine Petroleum Corp., Avant	E half, Sec. 24-24n-11e	C-A	6,500
Wolverine Petroleum Corp., Bartlesville	SE, Sec. 13-26n-12e	Comp.	2,000
Wolverine Petroleum Corp., Dillard	SW, Sec. 22-4s-2w	Absp.	8,000
Wright, J. H., estate, Sapulpa	Kellyville	Absp.	4,500

†Owned jointly with Continental Oil Co. ‡Owned jointly with The Texas Company. §Plant owned jointly with Sinclair Oil & Gas Co.

PENNSYLVANIA

Alum Rock Gas Co., Oil City	Fern	Comp.	200
Atlas Oil Co., Clarion	Near Tylersburg	Comp.	350
Barbary & Hardt	Wildwood	Comp.	11
Bartoe, Harry T., Petrolia	Petrolia	Comp.	25
Bayliss & Fasenmeyer	Titusville, 2 mi. S	Comp.	1,000
Berry, Pryor	Petrolia	Comp.	25
Brown, Clara L.	Kinzua	Comp.	100
Buzard Gas Co., Emlenton	Emlenton, 1 mi. E	Comp.	50
Carnahan, Charles E., and Lida M.	Tidioute, ½ mi. W	Comp.	500
Carnegie Natural Gas Co., Lone Pine	Washington County	Absp.	1,000
Carnegie Natural Gas Co.	Mount Morris	Absp.	200
Carnegie Natural Gas Co., Waynesburg	Greene County	Absp.	4,500
Carpenter, M. A., Karns City	Fairview Twp.	Comp.	200
Chambers Oil Co.	.....	Comp.	150
Christie & Timblin	Evans City	Comp.	*25
Clinger Oil & Gas Co., Tidioute	Triumph Twp., Warren County	Comp.	750
Clinger Oil & Gas Co., Tidioute	Truemans, Forest County	Comp.	750
Cochran, John G., Sheffield	Lot 435, Sheffield Twp.	Absp.	1,100
Coffin, C. J., Chicora	Karns City	Comp.	75
Coffin, C. J., Chicora	Chicora	Comp.	75
Columbia Gas & Elec. Corp., McKinley	Elk County	Absp.	1,500
Columbia Gas & Elec. Corp., Majorville	West Twp.	Absp.	7,080
Columbia Gas & Elec. Corp., Waynesville	Franklin Twp.	Absp.	3,930
Columbia Gas & Elec. Corp., Heard	Finley Twp., West County	Absp.	2,550
Conquer, S. J.	Sheffield	Comp.	*80
Cook Oil Lease, Kellettville	Mayburg	Comp.	300
Daugherty, C. R., Y.M.C.A. Bldg., Butler	Herman, Butler County	Comp.	20
Daugherty, C. R., Y.M.C.A. Bldg., Butler	Petrolia, Butler County	Comp.	27
Daugherty, C. R., Y.M.C.A. Bldg., Butler	Oakdale, Allegany County	Comp.	90
Dempseytown Gas Co., Oil City	Leeper	Comp.	200
Dunlap, Harry G., Chicora	Chicora, 1 mi. W	Comp.	11
Edwards, E. A., Titusville	Titusville	Comp.	170
Elsworth, Hefron & Co.	Lucinda	Comp.	400
Ellenberger, W. J., & Sons	.....	Comp.	300
Elliott Bros.	Chicora	Comp.	500
Equitable Gas Co., Rogersville	¼ mi. E of Rogersville	Absp.	2,500
Equitable Gas Co., R.F.D. 1, Clarksburg, Pa.	5 mi. SE Marianna	Absp.	2,000
Federal Oil & Gas Co., McDonald	McDonald	Comp.	100
Fleming, J. E., Titusville	Grand Valley	Comp.	500
Forest Chemical Co.	Barnes	Absp.	300
Forest Oil & Gas Co., Clinton	Clinton, 3 mi. N	Comp.	300
Gamble, James	Karns City, 1½ mi. E	Comp.	75
Gould, Nancy E., & Son, R.F.D. 6, Butler	Penn Twp.	Comp.	10
Hadden, James B., Sheffield	Henry's Mill	Comp.	84
Hague & Co.	Tidioute	Comp.	500
Haskell & Bayliss	Emlenton, 4 mi. E	Comp.	150
Haskell Bros., Pleasantville	Southwest Twp., Warren County	Comp.	20
Haskell, Roth & Bayliss, Tidioute	Triumph Twp., Warren County	Comp.	300
Hickey & Rieg, Clarendon	Henry's Mill	Comp.	300
Home Gas Co., Clarion	Highland Twp.	Comp.	.....
Hope Construction & Refining Co.	Brave	Absp.	20,000
Hope Construction & Refining Co.	Imperial	Char.	3,600
Hope Construction & Refining Co.	McKeesport	Char.	*2,600
Hope Construction & Refining Co.	Mayport	Absp.	1,500
Hope Construction & Refining Co.	Yatesboro	Absp.	*900
Hunter, Livingston L. Trust, Tidioute	Trunkeyville, Forrest County	Comp.	*300
Jackson, Fred W.	Chicora	Comp.	360
Jennings, E. H., Bros. Co., 608 Columbia Bldg., Pittsburgh	Fayette Twp., Allegheny County	Comp.	1,000
Jennings, E. H., Bros. Co., 608 Columbia Bldg., Pittsburgh	Fayette Twp., Allegheny County	Comp.	150
Johnson, C. H., and H. G. Dunlap	Chicora	Comp.	60
Kapp & Brocklehurst, Tidioute	Tidioute	Comp.	200
McMeekin, Chas. T., Karns City	Karns City, 1½ mi. SW	Comp.	50
Mars Oil Co. (The), Oil City	Queen St.	Absp.	*1,500
Mars Oil Co. (The), Oil City	Lewis Run	Absp.	6,500
Mars Oil Co. (The), Oil City	Hampton Sta.	Absp.	4,000
Mars Oil Co. (The), Oil City	Van	Absp.	7,500
Mars Oil Co. (The)	Miola	Absp.	*1,800
Master & Hess, Inc.	Fern, 1 mi. W	Comp.	100
Midland Oil Co., Petroleum Center	Petroleum Center	Comp.	1,200
Montgomery, James, R.F.D. 1, McCoy Road	McKee's Rocks	Comp.	100
Moore, Way & Harrison	Titusville, 7 mi. N	Comp.	150
Myers Bros. & Hazzard	Tidioute, 1 mi. N	Comp.	100
National Gasoline Co.	Grand Valley	Comp.	250
National Gasoline Co.	West Hickory	Comp.	250
North Penn Gas Co., 103 Mill St., Port Allegany	Sharon, Potter County	Absp.	*600
O'Hara, Sarah C., 218 E. North St., Butler	Fairview Twp.	Comp.	100
Pennsylvania Fuel Supply Co.	Clarion	C-A	*800
Pennsylvania Oil Co.	Sheffield	C-A	10,000
Porter Bros., Catfish	Catfish, 1 mi. E	Comp.	100
President Oil Co., Emlenton	Bruin, 2 mi. W	Comp.	50
President Oil Co., Emlenton	Emlenton, 2 mi. SW	Comp.	150
President Oil Co., Emlenton	Fryburg, 6 mi. N	Comp.	500
Price, Harry D., Renfrew	Butler Twp., Butler County	Comp.	35
Red Brush Oil Co., Tionesta	6 mi. S Tionesta	Comp.	100
Riddle Farm Oil Co., Karns City	½ mi. S Karns City	Comp.	50
Ritzert Bros., Chicora	Chicora	Comp.	70
Sand Hill Lease, Tidioute	Perry Twp., Armstrong	Comp.	500
Say, George K., R.F.D. 2, Karns City	Triumph Twp., Warren County	Comp.	40
Sloan & Zook Co., Kane	Kane	Absp.	1,500
Southern Oil Co., 1005 Farmers Bank Bldg., Pittsburgh	Miola	Comp.	150
Southern Oil Co., 1005 Farmers Bank Bldg., Pittsburgh	Elmo	Comp.	*150
Southern Oil Co., 1005 Farmers Bank Bldg., Pittsburgh	Volant	Comp.	*50
Southern Oil Co., 1005 Farmers Bank Bldg., Pittsburgh	Pleasantville	Comp.	*150
Southern Oil Co., 1005 Farmers Bank Bldg., Pittsburgh	Clarion	Comp.	150
Southern Oil Co., 1005 Farmers Bank Bldg., Pittsburgh	Butler	Comp.	50
South Penn Oil Co., Pittsburgh	Evans City	Comp.	25
South Penn Oil Co., Pittsburgh	Evans City	Comp.	150
South Penn Oil Co., Pittsburgh	Badon	Comp.	50
South Penn Oil Co., Pittsburgh	Bradford	Comp.	550
South Penn Oil Co., Pittsburgh	South Heights	Comp.	550
South Penn Oil Co., Pittsburgh	Campbell	Comp.	150
South Penn Oil Co., Pittsburgh	Chaffee	Comp.	25
South Penn Oil Co., Pittsburgh	Evans City	Comp.	450
South Penn Oil Co., Pittsburgh	Guffey	Comp.	150
South Penn Oil Co., Pittsburgh	Henry's Mill	Comp.	300
South Penn Oil Co., Pittsburgh	Kane	Comp.	100
South Penn Oil Co., Pittsburgh	Wright	Comp.	550
South Penn Oil Co., Pittsburgh	New Freeport	Absp.	1,000
South Penn Oil Co., Pittsburgh	Noblestown	Comp.	1,600
South Penn Oil Co., Pittsburgh	Evans City	Comp.	125
South Penn Oil Co., Pittsburgh	Parker's Landing	Comp.	80
South Penn Oil Co., Pittsburgh	President	Comp.	500
South Penn Oil Co., Pittsburgh	Tiona	Comp.	450
South Penn Oil Co., Pittsburgh	Porkey	Comp.	650
South Penn Oil Co., Pittsburgh	Sturgeon	Comp.	1,500
South Penn Oil Co., Pittsburgh	Noblestown	Comp.	125
Stephens, W. J., Grand Valley	Grand Valley	Comp.	100
Success Oil Co., Titusville	Petroleum Center, W	Comp.	1,500
Surety Oil Co., Inc., Titusville	2½ mi. S Titusville	Comp.	1,000
Tarbell & Co., Grand Valley	2 mi. from Grand Valley	Comp.	80
Thomas, R. L., Tidioute	Triumph Twp., Warren County	Comp.	200
Tompsett Bros., Tidioute	Triumph Twp.	Comp.	200
Triangle Co., McKees Rocks	Pine Hollow Road	Comp.	300
Triumph Petroleum Co., Route 3, Tidioute	Triumph Twp., Warren County	Comp.	175
Vogebacker, A. J. and J. E.	Lucinda	Comp.	42
Wahl, A. R., Evans City	Wahl farm, Forward Twp.	Comp.	150
Warner-Caldwell Oil Co., R.F.D. 2, Titusville	Titusville	Comp.	500
Wheeler, D. H., Box 86, Petrolia	Petrolia, 1½ mi. SE	Comp.	200
Will, Jacob W., McDonald	Canonsburg	Comp.	65

TEXAS

Airolene Gasoline Corp., Kennedy Bldg., Tulsa, Okla.	Sec. 9, Blk. 27, H.&G.N. R.R. Sur.	Absp.	8,000
Amerada Petroleum Corp., Drawer C, Fry	Chas. Betts Sur. No. 625, Brown County	Absp.	5,800
Arab Gasoline Corp., Eastland	SE, Sec. 17, Blk. 4, H.& T.C. Ry. Sur.	Absp.	25,000
Barker & Goforth	Ranger, 5 mi. W	Absp.	*1,500
Bell Oil & Gas Co.	Borger	Absp.	*25,000
Bell Oil & Gas Co., Burkburnett	Burkburnett	Absp.	*20,000
Big Lake Oil Co., Texon	Sec. 2, Blk. 2, Reagan County	Absp.	50,000
Breckenridge Gasoline Co., Breckenridge	Breckenridge	Absp.	12,000
California United Gasoline Corp., Coleman	Overall ranch	C-A	10,000

Company and plant address—	Field location—	Type of plant	Daily cap'y (gals.)
California United Gasoline Corp., Coleman	Weaver ranch	C-A	10,000
Canadian River Gas Co., Colorado Springs, Colo.	Sec. 33, Blk. P. Mc., E.L. R.R. Sur., Moore County	Absp.	30,000
Cannon Gasoline Co., Box 963, Amarillo	2½ mi. N Amarillo	Absp.	5,000
Coltexo Corp., Lefors	Sec. 2, A.C.H.&B. Sur., Gray County	Absp.	40,000
Coltexo Corp., Lefors	Sec. 1, H.&G.N., Blk. B-2, Gray County	Absp.	40,000
Coltexo Corp., Lefors	B.&B. Sur. 2, Gray County	Absp.	20,000
Columbian Gasoline Corp., Shamrock	Sec. 46, H.&G.N., Blk. 17, Wheeler County	Absp.	7,000
Consolidated Gasoline Co., Eastland	Eastland, 2 mi. SW	Absp.	12,000
Continental Oil Co., Wichita Falls	C. Winters Sur., Wichita County	Comp.	2,500
Continental Oil Co., Wichita Falls	C. Winters Sur., Wichita County	Comp.	*700
Empire Oil & Refining Co., Pampa	NE, Sec. 152, Blk. 3	Absp.	30,000
Excelsior Refining Co., Henderson, Tex.	M. J. Pru Sur., 9 mi. from Henderson	Absp.	26,000
Gladewater Gasoline Co., Gladewater	J. S. Crosby Sur.	Comp.	16,000
Graham Oil & Gas Co., Graham	Morrison farm	Absp.	8,000
Gulf Production Co., Fort Worth	Sec. 1, L.A.L. Sur., Stephens County	Absp.	10,600
Gulf Production Co., Fort Worth	S. B. Hollingsworth and H. B. Dance Sur., Rusk County	Comp.	15,000
Hanlon Gasoline Co., Breckenridge	3 mi. SE Breckenridge	Absp.	35,000
Hanlon Gasoline Co., Parks	6 mi. SE Breckenridge	Absp.	*20,000
Hanlon Gasoline Co., Eliasville	Eliasville	Absp.	*20,000
Harmony Gasoline Corp., Ardis Bldg., Shreveport, La.	S. G. Smith farm, Wm. H. Castleberry Sur., Gregg County	Absp.	25,000
Henderson, F. C., Inc., Sanford	Sanford	Absp.	20,000
Huber Petroleum Co., Box 278, Borger	Sec., A.&B. Sur.	Absp.	33,000
Humble Oil & Refining Co., Rising Star	Brown County	Absp.	15,000
Humble Oil & Refining Co., Iraan	Pecos County	Absp.	25,000
Humble Oil & Refining Co., Neches	Cherokee County	C-A	15,000
Humble Oil & Refining Co., Overton	Rusk County	Comp.	50,000
Humble Oil & Refining Co., Kilgore	Rusk County	Comp.	25,000
Humble Oil & Refining Co., Bellville	Austin County	Absp.	12,000
La Salle Petroleum Co., Wright Bldg., Tulsa, Okla.	Burkburnett	Comp.	*8,000
Lisbon Gasoline Co., Inc., Shreveport	Rusk County	Comp.	15,000
Lone Star Gas Co., Petrolia	3 mi. S Petrolia	Absp.	15,000
Lone Star Gas Co., Gainesville	2½ mi. W Gainesville	Absp.	*15,000
Lone Star Gas Co., Gordon	2 mi. E Gordon	Absp.	25,000
Lone Star Gas Co., Brazos	2 mi. E Brazos	Absp.	*15,000
Lone Star Gas Co., Desdemona	6 mi. SE Desdemona	Comp.	2,000
Lone Star Gas Co., Box 488, Ranger	9 mi. S Ranger	Comp.	8,000
Lone Star Gas Co., Box 882, Ranger	7 mi. NE Ranger	Comp.	2,000
Lone Star Gas Co., R.F.D. 1, Cisco	7 mi. SE Moran	Absp.	*5,000
Lone Star Gasoline Co., Box 788, Ranger	Ranger (4)	Absp.	65,000
Lone Star Gasoline Co., Box 788, Ranger	Eastland	Absp.	6,500
Lone Star Gasoline Co., Box 788, Ranger	Olden	Absp.	*8,500
Lone Star Gasoline Co., Drawer 00, Breckenridge	Breckenridge	Absp.	31,000
Magnolia Petroleum Co., Burkburnett	J. G. Hardin farm, 1 mi. NW Burkburnett	Comp.	4,250
Magnolia Petroleum Co., Electra	Sec. 17, Blk. 13, H.&T.C. Ry. Co. Sur.	Comp.	4,500
Magnolia Petroleum Co., Olden	R. S. Harris farm, Matt Finch Sur.	Absp.	9,000
Magnolia Petroleum Co., Desdemona	Caruth farm, Smelzer Sur.	Absp.	7,500
Magnolia Petroleum Co., Pampa	NE, Sec. 82, Blk. 3, I.&G. N. Ry. Sur.	Absp.	4,250
Magnolia Petroleum Co., Le Fors	Sec. 30, Blk. B-2, H.&G. N. Ry. Sur.	Absp.	15,000
Magnolia Petroleum Co., Skellytown	Sec. 91, Blk. 4, I.&G.N. Ry. Sur.	Absp.	3,500
Magnolia Petroleum Co., Lela	NE, Sec. 39, Blk. 24, H. &G.N. Sur.	Absp.	2,000
Mid-Kansas Oil & Gas Co., Thompson Bldg., Tulsa, Okla.	J. W. Hill lease, Stephens County, Eliasville	Absp.	6,000
Mid-Kansas Oil & Gas Co., Thompson Bldg., Tulsa, Okla.	Tullos lease, Stephens County, Eliasville	Absp.	15,000
Midland Gasoline Co., Box 26, Conroe	Conroe Field, Montgomery County	Absp.	25,000
National Supply Co. of Texas, Shamrock	SE, Sec. 41, Blk. 24	Absp.	10,000
Ockland Gasoline Production Co., Tulsa, Okla..	Desdemona	Absp.	4,000
Omar Gasoline Co., Wichita Falls	NW of Burkburnett	Comp.	11,500
Orfic Gasoline Production Co. of Texas, 508 McBirney Bldg., Tulsa, Okla.	Desdemona	Comp.	4,000
Pacific American Gasoline Co. of Texas, Box 278, Borger	Sec. 28, Blk. Y, A.&B. Sur.	Absp.	16,000
Paramount Natural Gasoline Co.	Sec. 28, Blk. D-2, H.&G. M. Sur.	Absp.	16,000
Phillips Petroleum Co., Breckenridge	Sec. 8, T.&P. R.R. Sur., Blk. 5, Stephens County	Absp.	*15,000
Phillips Petroleum Co., Borger	NE SE, Sec. 21, Blk. Y, A.&B. Sur.	Absp.	40,000
Phillips Petroleum Co., Bowers	W half, Sec. 62, H.&G.N. Sur., Blk. B-2, Gray County	Absp.	50,000
Phillips Petroleum Co., Canadian	NW SE, Sec. 1, Blk. X02, Hutchinson County	Absp.	25,000
Phillips Petroleum Co., Carson	W. central, Sec. 115, I.&G. N. Sur., Blk. 5, Carson County	Absp.	20,000
Phillips Petroleum Co., Eliasville	6.88 ac. N half, Sur. 1,174 T.E.&L., Stephens County	Absp.	12,000
Phillips Petroleum Co., Frankell	Sec. 51, T.&P. Sur., Blk. 6, Stephens County	Absp.	8,500
Phillips Petroleum Co., German	SE cor. Thos. Mulryne Sur. A377, H.&T.C., Blk. 1, Eastland County	Absp.	12,000
Phillips Petroleum Co., Gray	Sec. 32, H.&G.N. Sur., Blk. 2, Gray County	Absp.	100,000
Phillips Petroleum Co., Helios	W. A. Eaken 132-ac. tract, Eastland County	Absp.	15,000
Phillips Petroleum Co., Herron City	SE, Sec. 20, P. J. Humphrey Sur. A-153	Absp.	9,000
Phillips Petroleum Co., Hohertz	12 ac., Sec. 62, Blk. 4, T.&P.R.R. Sur., Stephens County	Absp.	5,000
Phillips Petroleum Co., Ibex	NW, Sec. 28, B. AL., Shackelford County	Absp.	45,000
Phillips Petroleum Co., Johnson	Cen. 60 ac., S half, Sec. 69, Blk. 46, H.&T.C. Sur., Hutchinson County	Absp.	50,000
Phillips Petroleum Co., Judkins	W 60 ac., N half S half Sec. 1, University land, Blk. 35, Ector County	Absp.	15,000
Phillips Petroleum Co., Le Fors	NE NE, Sec. 56, Blk. 25, H.&G.N. Sur., Gray County	Absp.	15,000
Phillips Petroleum Co., McCamey	NE NE, Sec. 216, C.C.S. D.&R.G.N.G.R.R. Sur., Blk. F, Crane County	Absp.	75,000
Phillips Petroleum Co., Necessity	Blk. 15, T.&P.R.R. Sur., Blk. 6, Stephens County	Absp.	*2,500
Phillips Petroleum Co., North	SW, Sec. 25, and NW, Sec. 36, I.&G.N. Sur., Blk. 3, Gray County	Absp.	90,000
Phillips Petroleum Co., Oil City	20 ac., SE cor. R. D. Owens Sur., A-2,249, Young County	Absp.	*7,500
Phillips Petroleum Co., Olney	17.61 ac., T.E.&L. Sur., Blk. 2,403, Archer County	Comp.	*10,000
Phillips Petroleum Co., Pampa	W half SW, Sec. 88, H.& G.N. Sur., Blk. B-2, Gray County	Absp.	45,000
Phillips Petroleum Co., Panhandle	SW, Sec. 113, I.&G.N.R.R. Sur., Blk. 5, Carson County	Absp.	15,000
Phillips Petroleum Co., Pantex	SE cor. Mary Whitley Sur., Blk. 8, Hutchinson County	Absp.	50,000
Phillips Petroleum Co., Phildan	NW SE, Sec. 88, Blk. B-2, H.&G.N.R.R. Sur., Gray County	Comp.	*20,000
Phillips Petroleum Co., Rockcreek	N half NW, Sec. 22, Blk. Y, A.&B. Sur., Hutchinson County	Absp.	45,000
Phillips Petroleum Co., Roeser	SW SW, Sec. 17, T.&P. R.R. Sur., Blk. 8, Stephens County	Absp.	*12,000
Phillips Petroleum Co., South Bend	20 ac., N. centr. J. Garrett Sur. A-103, Young County	Absp.	9,000
Phillips Petroleum Co., Sanford	Sec. 81, Blk. 46, H.&T.C. R.R. Sur., Hutchinson County	Absp.	20,000
Phillips Petroleum Co., Texroy	SE, Sec. 3, Blk. B-3, D.& S.E.R.R. Sur., Hutchinson County	Absp.	45,000
Philmore Gasoline Corp., 723 Kennedy Bldg., Tulsa, Okla.	E half, J. M. Daugherty 150 ac., Isaac Hughson Sur.	C-A	15,000
Pure Oil Co., Van	Van Zandt County	Comp.	37,000
Red River Oil Co., Box 712, Tulsa, Okla.	Electra	Comp.	5,000
Roeser & Pendleton, Inc., Fort Worth	NE 85, E.T. Ry. Sur., Shackelford County	Absp.	25,000
Roeser & Pendleton, Inc., Fort Worth†	Reynolds ranch, Shackelford County, 7 mi. NW Albany	Absp.	25,000
Shamrock Oil & Gas Co., Pampa	Sec. 50, Blk. 25, H.&G.N. Sur.	Absp.	15,000
Shell Petroleum Corp., Pampa	SW, Sec. 83, Blk. 3, I.& G.N. Sur.	Absp.	10,000
Shell Petroleum Corp., Pampa	SE, Sec. 107, Blk. 5, I.& G.N. Sur.	Absp.	15,000
Signal Gasoline Co. of Texas, Box 157, Best ...	Best, Reagan County	Absp.	50,000
Skelly Oil Co., Box 178, Stinnett	NW cor. J. W. Proctor Sur., Moore County	Absp.	2,500
Skelly Oil Co., Box 952, Burkburnett	G. W. Darby or J. G. Hardin Sur.	Comp.	11,000
Skelly Oil Co., Box 127, Skellytown	NE, Sec. 174, Blk. 3	Absp.	20,000
Skelly Oil Co., Box 336, Whittenburg	NW, Sec. 5, Blk. Y, Hutchinson County	Char.	*4,000
Skelly Oil Co., Box 336, Whittenburg	SW NW SW, Sec. 11, Blk. Y, Hutchinson County	Char.	*4,500
Skelly Oil Co., Box 336, Whittenburg	NW NW, Sec. 20, Blk. Y, Hutchinson County	Char.	2,000
Skelly Oil Co., Box 336, Whittenburg	SW, Sec. 4, Blk. B-4, D.& S.E. Ry. Sur.	Absp.	9,000
Skelly Oil Co., Box 336, Whittenburg	SW SE, Sec. 6, Blk. Y, Hutchinson County	Absp.	*15,000
Skelly Oil Co., Box 952, Burkburnett	H.T.&B.R.R. Sur. A-124, Wichita County	Comp.	1,500
Skelly Oil Co., Box 127, Skellytown	S half, Sec. 88, Blk. 4, I.&G.N.R.R. Sur.	Absp.	*9,000
Skelly Oil Co., Box 127, Skellytown	NW cor., Sec. 86, Blk. 4, I.&G.N. Sur.	Char.	4,000
Skelly Oil Co., Box 952, Burkburnett	Waggoner County	Booster	....
Southern Gasoline Co., Ranger	Tiffin	Absp.	2,500
South Plains P. L. Co., Lubbock	Sec. 45, Blk. 2, A.B.&M. Sur.	Absp.	35,000
Stanolind Oil & Gas Co., Desdemona	Desdemona No. 5	Comp.	10,000
Stanolind Oil & Gas Co., Desdemona	Desdemona No. 6	Absp.	10,000
Sunray Oil Co., Tulsa, Okla.	Sunray, Moore County	Absp.	9,000
Texas Company, The (Delaware), Electra	½ mi. NW Electra	Comp.	9,300
Texas Company, The (Delaware), Burkburnett.	3 mi. NW Burkburnett	Comp.	33,000
Texas Company, The (Delaware), Olney	2½ mi. NE Olney	Comp.	7,000
Texas Gasoline Co., Desdemona	1½ mi. from Desdemona	Absp.	2,000
Texas Pacific Coal & Oil Co., Fort Worth	Caddo	Absp.	15,000
Texas Pacific Coal & Oil Co., Fort Worth	Strawn	Absp.	5,000
Texas Pacific Coal & Oil Co., Fort Worth	Eliasville	Absp.	15,000
Texas Pacific Coal & Oil Co., Fort Worth	Caddo	Absp.	10,000
Texoma Natural Gas Co., 20 N. Wacker Drive, Chicago, Ill.	Fritch, Sec. 5, T.T.R.R. Sur., Blk. Y-2	Absp.	80,000
United Gas Public Service Co., Box 2492, Houston	Jane Thorpe Sur., Panola City	Absp.	8,000
United Gas Public Service Co., Box 2492, Houston	Refugio Field	Absp.	25,000
Waggoner Gasoline Co., Electra	Sec. 33, Blk. 4, Wilbarger County	Absp.	20,000
Ward Gasoline Co., Sayre, Okla.	7 mi. N Breckenridge	Absp.	5,000
Western Oil Corp. of Texas, Box 216, Electra..	4 mi. SE Electra	Absp.	6,000
Western Oil Corp. of Texas, Burkburnett	.....	Comp.	8,000
Western Oil Corp. of Texas, Burkburnett	.....	Comp.	*8,000
Wilcox, E. F., Oil & Gas Co., Tulsa, Okla.	Sec. 62, Blk. 3, I.&G.N. Sur.	Comp.	4,500

†Owned jointly with Continental Oil Co.

WEST VIRGINIA

American Oil Development Co., Pittsburgh, Pa.	McElroy district	Comp.	1,200
American Oil Development Co., Pittsburgh, Pa.	Mead district	Comp.	200
American Oil Development Co., Pittsburgh, Pa.	Lafayette district	Comp.	175
Carbide & Carbon Chemicals Corp., 30 E. 42nd St., New York, N. Y.	Hastings	Comp.	1,000
Carbide & Carbon Chemicals Corp., 30 E. 42nd St., New York, N. Y.	Diamond	Comp.	2,500
Carnegie Natural Gas Co., Hundred	Hundred	Absp.	2,300
Carnegie Natural Gas Co., Pine Grove	Pine Grove	Absp.	3,000
Carnegie Natural Gas Co., Underwood	Underwood	Absp.	3,000
Carnegie Natural Gas Co., Woodruff	Woodruff	Absp.	1,800
Carnegie Natural Gas Co., Toll Gate	Ritchie County	Absp.	....
Casto Oil Co., St. Marys	Union district	Comp.	250
Chemical Oil & Gas Co., Big Bend	Grantsville	C-A	500
Cumberland & Allegheny Gas Co.	Jane Lew, 3 mi. S	Absp.	3,000
Dinsmoor & Co., St. Marys	Pleasants County	Comp.	325
Dun Mar Oil & Gas Co., Route 3, Fairview	Jarke Run	Comp.	50
Falling Rock Cannel Coal Co.	Weir	Absp.	3,000
Federal Oil & Gas Co., Elizabeth	Elizabeth, S	Comp.	250
Federal Oil & Gas Co., Weston	Weston, 8 mi.	Comp.	500
Hapgood, R. T., & Co., Charleston	Cedar Grove	Absp.	3,000
Hapgood, R. T., & Co., Charleston	Blue Creek	Comp.	1,000
Henighan & Hanlon, Sistersville	Doddridge County	Comp.	200
Hope Construction & Refining Co.	Barren Creek	Absp.	*12,000
Hope Construction & Refining Co.	Bristol	Absp.	8,000
Hope Construction & Refining Co.	Ellenboro	Absp.	*300
Hope Construction & Refining Co.	Littleton	Absp.	*15,000
Hope Construction & Refining Co.	Middlebourne	Comp.	400
Hope Construction & Refining Co.	Mount Clair	Absp.	2,500
Hope Construction & Refining Co.	Pine Grove	Absp.	40,000

Company and plant address—	Field location—	Type of plant	Daily cap'y (gals.)
Hope Construction & Refining Co.	Rachel	Absp.	*10,000
Hope Construction & Refining Co.	Salem	Absp.	4,000
Hope Construction & Refining Co.	Sistersville	Absp.	400
Hope Construction & Refining Co.	Sistersville	Comp.	1,500
Hope Construction & Refining Co.	Sistersville	Comp.	1,000
Hope Construction & Refining Co.	Spencer	Absp.	*1,000
Hope Construction & Refining Co.	Waverly	Absp.	5,000
Jennings Oil Co., 608 Columbia Bldg., Pittsburgh	Wetzel County	Comp.	100
Kanawha Oil Co., 608 Columbia Bldg., Pittsburgh	Wetzel County	C-A	1,000
Kanawha Oil Co., 608 Columbia Bldg., Pittsburgh	Wetzel County	Comp.	100
Manufacturers Light & Heat Co., Rosbys Rock	Clay Township	Absp.	1,740
Manufacturers Light & Heat Co., Porters Falls	Green Township	Absp.	6,540
National Compressing Co., Parkersburg	Rutherford, Ritchie County	Comp.	50
New York Petroleum Co., Box 563, Parkersburg	Ritchie County	Comp.	150
New York Petroleum Co., Box 563, Parkersburg	Tyler County	Comp.	150
Oil & Gas Co., 318½ Juliana St., Parkersburg	Ritchie County	Comp.	250
Owens, Libbey-Owens Gas Dept., Charleston	South Malden, Kanawha County	Absp.	10,000
Pittsburgh & West Virginia Gas Co., Hundred	Wetzel County, 1 mi. N Hundred	Absp.	3,000
Pure Oil Co., Dawes	Kanawha County	Comp.	11,000
Reno Oil Co., Sistersville	Tyler County	Comp.	218
Reno Oil Co.	Tyler County	Comp.	36
Reno Oil Co.	Tyler County	Comp.	40
Reno Oil Co.	Ritchie County	Comp.	48
Reno Oil Co.	Ritchie County	Comp.	74
Reserve Gas Co., Box 1756, Pittsburgh, Pa.	Valley Chapel	Absp.	20,000
Southern Oil Co., 1005 Farmers Bank Bldg., Pittsburgh, Pa.	Sistersville, Tyler County	Comp.	150
Southern Oil Co., 1005 Farmers Bank Bldg., Pittsburgh, Pa.	Porters Falls, Wetzel County	Comp.	*100
Southern Oil Co., 1005 Farmers Bank Bldg., Pittsburgh, Pa.	Eureka, Pleasants County	Comp.	*100
Southern Oil Co., 1005 Farmers Bank Bldg., Pittsburgh, Pa.	Macfarlan, Ritchie County	Absp.	*1,500
South Penn Oil Co., Pittsburgh, Pa.	Alvy	Comp.	1,500
South Penn Oil Co., Pittsburgh, Pa.	Bulls Mills	Comp.	500
South Penn Oil Co., Pittsburgh, Pa.	Blue Creek	Comp.	1,700
South Penn Oil Co., Pittsburgh, Pa.	Blue Creek	Comp.	3,000
South Penn Oil Co., Pittsburgh, Pa.	Buia (near Wana)	Comp.	400
South Penn Oil Co., Pittsburgh, Pa.	Clay	Comp.	2,200
South Penn Oil Co., Pittsburgh, Pa.	Coco	Comp.	2,200
South Penn Oil Co., Pittsburgh, Pa.	Fink	Comp.	1,000
South Penn Oil Co., Pittsburgh, Pa.	Glenville	Comp.	1,100
South Penn Oil Co., Pittsburgh, Pa.	McFarlin	Comp.	2,000
South Penn Oil Co., Pittsburgh, Pa.	Mannington	Comp.	1,500
South Penn Oil Co., Pittsburgh, Pa.	Metz	Comp.	1,500
South Penn Oil Co., Pittsburgh, Pa.	Pine Grove	Comp.	2,500
South Penn Oil Co., Pittsburgh, Pa.	Shirley	Comp.	500
South Penn Oil Co., Pittsburgh, Pa.	Shirley	Comp.	1,200
South Penn Oil Co., Pittsburgh, Pa.	Smithfield	Comp.	3,000
South Penn Oil Co., Pittsburgh, Pa.	Spencer	Comp.	2,600
South Penn Oil Co., Pittsburgh, Pa.	Statler Run	Comp.	2,200
South Penn Oil Co., Pittsburgh, Pa.	Walton	Comp.	2,400
South Penn Oil Co., Pittsburgh, Pa.	Wolf Summit	Comp.	2,000
South Penn Oil Co., Pittsburgh, Pa.	Yawkey	Comp.	3,000
South Bros., Inc., Steubenville, Ohio	Hancock County	Comp.	*200
Tyler Oil Co., Sistersville	Tyler County	Comp.	49
Tyler Oil Co., Sistersville	Tyler County	Comp.	35
Tyler Oil Co., Sistersville	Tyler County	Comp.	2[illegible]
Viking Gasoline Corp., Charleston	Morgantown	Char.	1,000
Viking Realty Co., Martha	Cabell County	Char.	1,000
Virginian Gasoline & Oil Co., Sandyville	Jackson County	Char.	40,000
Virginian Gasoline & Oil Co., Ona	Cabell County	Absp.	*18,000
Virginian Gasoline & Oil Co., Charleston	Kanawha County	Char.	35,000
Virginian Gasoline & Oil Co., Clendenin	Kanawha County	Absp.	40,000
Virginian Gasoline & Oil Co., Charleston	Kanawha County	Char.	2,000
Virginian Gasoline & Oil Co., Spencer	Roane County	Char.	12,000
Virginian Gasoline & Oil Co., St. Albans	Kanawha County	Char.	3,500
Virginian Gasoline & Oil Co., Louisia, Ky.	Wayne County	Char.	*3,500
Virginian Gasoline & Oil Co., Hubball	Lincoln County	Char.	12,000
Virginian Gasoline & Oil Co., Mammonth	Kanawha County	Absp.	2,500
Virginian Gasoline & Oil Co., Blue Creek	Kanawha County	Comp.	1,200
Virginian Gasoline & Oil Co., Stoffel	Kanawha County	Absp.	1,200
Virginian Gasoline & Oil Co., Elkview	Kanawha County	Absp.	1,000
Virginian Gasoline & Oil Co., Three Mile	Kanawha County	Absp.	3,500
Virginian Gasoline & Oil Co., Pad	Roane County	Absp.	800
Watson, G. L., Parkersburg	Belmont	Comp.	50
WYOMING			
Continental Oil Co., Denver, Colo.	Sec. 5, R. 78w, T. 39n	Absp.	15,000
Stanolind Oil & Gas Co., Tulsa, Okla.	Sec. 36-40-79	Comp.	135,000
New York Oil Co., P.O. Box 1091, Casper	T. 32, R. 95, S. 10	Absp.	1,500
Ohio Oil Co., Manville	Niobrara County	Absp.	7,500
Ohio Oil Co., Rock River	Carbon County	Absp.	4,500
Ohio Oil Co., Columbus	Natrona County	Absp.	14,400
Ohio Oil Co., Kirby	Hot Springs	Comp.	7,560
Producers & Refiners Corp., Casper	NW, Sec. 7-26-89	Absp.	15,000
Standard Engineering Corp., Box 1739, Casper.	Casper	Absp.	2,500

Production and Trends in Gasoline Industry

(Continued from Page 67)

our market above this can be expected, however, until motor fuel prices advance. Blenders or export purchasers will not pay the natural producer more for a product that can be purchased at a lower price from the refiner, so also a refiner will not pay more for a product than he can realize from its sale.

Cause of Low Price

The present breakdown of motor fuel price is the result of many factors; overproduction of motor fuel; cheap crude being handled by both the large refiner and small topping plant operator; overproduction of crude for the exponent of proration or underproduction for the exponent of antiproration; bootlegging crude oil; tax evasion; price cutting, and lack of effective laws. How many of you gentlemen are doing your share toward helping to remedy the above evils? Certainly the average plant represents an investment many times that of the average lease in a given oil pool, and the plant owner has an inherent right to help direct producing policies compatible with safeguarding his investment.

Before discussing new production possibilities from fields now under development, some consideration should be given to the possibilities of making a profit out of any new plant built. To illustrate what could be expected of 2, 3 and 4-cent gasoline for 5,000, 10,000 and 20,000-gallon plants operating either as well pressure units or machining the gas, curves have been developed showing the payout time for the different types of plants. It was considered that the unpaid principal of the investment employed was to draw interest at 6 per cent, compounded semiannually. In the event used material goes into the plant, the results shown in the curves should be discounted somewhat.

The curves speak for themselves, and if our past two years training is sound, that is, no investment made unless it can be paid out in from 6 to 12 months, very few plants will be built this year. New plant locations must not only pass all previous requirements that make for a profitable situation but in addition must be viewed and weighed from an oil producing standpoint; namely, rates of oil production after the plant is built consistent with good engineering practices that will assure gas withdrawals over a long period of time, or a producing policy allowing excessive withdrawals which will shorten the life of the plant, making its payout period questionable, or one allowing insufficient withdrawals for balancing the gasoline plant load. Fields illustrating the above production methods at this time in order named are Hobbs, Oklahoma City and East Texas.

Oklahoma's Position

Oklahoma's immediate natural production will be controlled to a large extent by allowable oil production at Oklahoma City. With allowables of 150,000 bbls. daily, natural production should remain around 250,000 gallons under present producing methods. Should this oil be flowed by external gas later, production should increase. Since no reliable information is at hand about future allowables in this field, a production estimate is "anybody's guess." In the Wentz and Keokuk Falls areas developments have not been sufficient to predict their natural gasoline potentialities. Without new plants, which are very unlikely, Oklahoma's production should show a nominal decrease for this year.

Future production in Texas depends upon several conditions: In the Panhandle recent regulations and laws allowing the processing of dry gas have increased production approximately 125,000 gallons daily. It is believed this increase is all that is to be expected in the near future. Should price increases justify new expenditures for plants now operating, some additional gasoline would be produced. The permanency of the existing laws will retard new plant construction materially. North Central Texas, due to its large percentage of lime production and new methods of acid treating this type of formation, should sustain its present production and show an increase if crude prices improve. East Texas, with its production of 35,000 gallons daily, is not expected to increase during the year. Operating problems, due to irregular gas supply, have increased production costs to a point that good prices must be obtained to operate present plants profitably. While this pool has a present and future potential for making large volumes of natural gasoline, fortunately for the present, production proration practices and large investments for the field lines forbid the economical manufacture of this gasoline. Some production can be acquired in the new Conroe Field, should prices justify plant construction. It is believed Texas production will remain substantially the same with a tendency to increase during the year. Normal decreases should occur in Kansas, Louisiana, and Arkansas.

Earnings of Oil Companies During 1932 Reflect Improvement in Situation

By A. E. MOCKLER

New York Bureau, The Oil and Gas Journal

NEW YORK, May 15.—The petroleum industry, in general, showed a substantial recovery in earning power during 1932, according to the annual statements of various companies in the industry which have reached stockholders during recent weeks. While first quarter earnings this year were adversely affected by unsettled conditions in crude production, and this condition still obtains to a large degree, the pronounced come-back staged by most companies during the past year has laid a strong groundwork for recovery, and this condition has exerted a pronounced influence upon recent buying of oil stocks in the securities markets.

Combined net earnings of a group of 26 companies, whose reports were selected at random, show net profit of $71,775,881 earned by 22 of these companies for 1932, offset by net losses aggregating $6,776,482 by the remaining four companies in the group, resulting in net combined earnings of $64,999,399 for the entire group during 1932.

As contrasted with these figures, the same group of companies during the previous year showed 11 companies reporting combined net earnings of $44,323,355, while the remaining organizations in the group recorded a combined net loss of $93,560,153, resulting in a combined net loss of $49,236,798 for the entire group for 1931.

The above data show the almost complete reversal in the position of the industry, from the standpoint of earnings, and augurs well for a substantial volume of equipment business once current market conditions show sufficient stability to permit many organizations in the industry to go forward with construction and expansion plans which have been held in abeyance during the worst period of the industry's depression, which now appears to have come to an end.

Many prominent units in the industry are now making plans for recapitalization, which will substantially improve their statistical position and make possible long-planned expenditures.

While some companies in the industry have continued the payment of unearned dividends out of surplus thus far in the business depression, on the theory that stockholders were badly in need of their regular income, others have taken a more cautious position and have promptly shut down on dividend disbursements pending a further recovery in earnings. This conservation of cash on hand was made essential in many instances by the realization of executives of the companies involved that new equipment, particularly on the part of those companies conducting refining operations, was essential if their business was to keep step with the remainder of the industry from a competitive standpoint.

A comparison of net earnings of the 26 companies mentioned for 1932 and the preceding year follows:

	Net earnings			
	1932	Per share	1931	Per share
Amerada Corp.	$1,147,207	$1.48	*$1,701,648	....
Atlantic Refining	3,918,021	1.45	513,750	$0.19
Associated Oil	3,434,727	1.50	3,112,388	1.36
Continental Oil	*1,444,133	....	*10,683,313	....
Chesebrough	798,860	6.65	1,294,106	10.78
Darby Petroleum	146,109	.29	*993,368	....
Gulf Oil	2,743,492	62	*23,670,052	....
Honolulu Oil	745,721	.80	*171,853	....
Louisiana Oil Refining	*1,964,147	....	*2,330,719	....
Margay Oil	44,584	.30	*228,179	....
Ohio Oil	7,343,981	.58	*21,488,762	....
Phillips Petroleum	775,766	.18	*5,576,409	....
Plymouth Oil	1,867,008	1.58	825,013	.78
Pure Oil	642,386	....	470,177	....
Seaboard Oil	858,172	.71	123,711	.10
Sun Oil Co.	4,198,046	2.35	3,107,147	1.63
South Penn Oil	945,761	.79	*820,191	....
Socony-Vacuum	5,330,282	.17	*4,169,248	....
Standard of Ohio	*1,206,361	....	2,359,173	2.34
Standard of Indiana (est.)	16,500,000	1.02	17,596,396	1.04
Standard of California	14,014,992	1.07	14,559,593	1.11
Texas Corp.	*2,161,841	....	*9,954,478	....
Texas-Pacific Coal & Oil	160,227	.17	*1,431,235	....
Texon Oil & Land	1,580,866	....	1,361,901	....
Tide Water Associated	4,718,693	.13	*5,813,671	....
Tide Water Oil	2,172,181	.54	*4,521,726	....

*Net loss.

Low Prices for Crude Attract Buyers, Who Ask for Large Volume of Oklahoma City Oil

By W. A. SPINNEY
Staff Correspondent, Oklahoma Fields

The low price of crude oil in Oklahoma has created a large demand for the product from the Oklahoma City Field, where it is believed about 100,000 bbls. of additional crude is wanted daily. About 30 producers in the Oklahoma City Field have shut in their wells. It is estimated that these wells are keeping around 50,000 bbls. of oil daily off the market.

The daily average production from the principal areas in the State for the week ending May 13 was as follows:

Pool—	Bbls.
Bowlegs	9,205
Bristow-Slick	10,500
Burbank	10,000
Carr City	6,435
Earlsboro	11,815
East Earlsboro	12,795
South Earlsboro	1,510
Little River	13,660
Oklahoma City	175,865
St. Louis-Pearson	18,740
Seminole City	8,145
Tatums	3,900
Total	282,570
Others	181,750
Total State	464,320

Increased demand for Oklahoma City crude oil was made to the Corporation Commission by several companies in the past week.

Sinclair Prairie Oil Marketing Co. petitioned the Commission for 60,000 bbls. daily in May, in addition to its present nomination of 9,500 bbls. daily. The new nomination included 50,000 bbls. a day from the Wilcox sand zone and 10,000 bbls. a day from the Simpson sand zone. Present nominations are 8,000 bbls. a day from the Wilcox sand and 1,500 bbls. daily from the Simpson sand.

Champlin Refining Co. of Enid, also asked for an additional 25,000 bbls. daily in May.

Wilcox Oil and Gas Co. was preparing to ask the Commission for more oil from the Oklahoma City field.

A hearing on these petitions was set for May 16. Opposition to the increase is expected to develop at the hearing, because of the 25-cent price now being paid for Oklahoma crude oil. The Kansas Commission, early in the week, announced that it would not permit a higher allowable during the period of low crude oil prices. Similar action has been asked of the Oklahoma Commission.

Watching for "Hot Oil" Shipments

In order to prevent any outbreak of "hot oil" shipments from the Oklahoma City Field, the proration department has put back to work all of its pipe line meter checkers.

George Kinney, assistant umpire, said that in his opinion no hot oil was being moved from the Oklahoma City field at this time.

Since the new proration department started functioning about a month ago, all the deputy umpires have been busy taking the new potentials of wells in the Oklahoma City Field, in the Wilcox sand and Simpson sand zones, and meter checking and other routine work was temporarily suspended.

Hearing on Seminole

The Corporation Commission will hear the petition for the taking of new potentials in the Greater Seminole area on May 17. Operators in that area are expected to oppose an open flow test on the wells in that district on account of the fact that it would be injurious to the producers because of the water encroachment. Rules and regulations will be discussed and it is expected the work will start in June.

G. W. Kinney, assistant state umpire, is expected to take over the work of Ray M. Collins, former state umpire, some time this week. J. J. O'Laughlin, deputy proration umpire, is in the Greater Seminole area making an inspection trip and will probably establish a branch proration office somewhere in that area.

If conditions permit, a third district proration office will be opened in southern Oklahoma, either at Ardmore or Duncan. The proration work will then be divided into areas so that the operators can make reports to their district offices.

The Corporation Commission continued until June 23, a group of cases that were formerly set for May 11. These include a number of petitions for permits to shoot wells in the Oklahoma City Field and also petitions to re-classify wells.

Wildcat Operations in Oklahoma

Northern Oklahoma

ALFALFA COUNTY

Company, farm and location— Remarks:
Acre et al's No. 1 Acre, C SW NE Sec. 14-24-11w.....O.W.D.D.; T.D. 5,502 ft; C.O.

BECKHAM COUNTY

Pattee Royalty Co.'s No. 1 Goose Tree, SW SE SW SE Sec. 32-10-23w ..... Drlg. 2,200 ft.

CADDO COUNTY

Abernathy & Brown's No. 2 Houston, Sec. 8-6-13w .....Abd. 1,121 ft.
Denver P. & R. Co.'s No. 1 Noe, NW SW SW Sec. 34-10-10w ..... Drlg. 8,395 ft.
W. L. Miller's No. 1 Gardner, SE SW Sec. 26-6-10w....Rig.

COAL COUNTY

Dodd & Burton's No. 1 Grigsby, NW SE NE Sec. 35-1-8..Oil show 1,858-67 ft.
Funk & Russell's No. 1 Miller, SE NE Sec. 10-2-8 .....Drlg. 2,830 ft.

GARFIELD COUNTY

Continental Oil Co.'s No. 1 Thompson, NW SW SW Sec. 7-24-4w ..... Drlg. 5,796 ft.

HASKELL COUNTY

Ault's No. 1 Hall, SE NW Sec. 25-9-19 .....Abd. 200 ft.
Ault's No. 1 Hall, C NW SW SE Sec. 14-9-19 .....Abd. 2,000 ft.

HUGHES COUNTY

Dixie-Lee Oil Co.'s No. 1 Taylor, C NW Sec. 27-5-10.... Spudding.
Pioneer Pet. Co.'s No. 1 Brock, SE cor. Sec. 26-5-11 .....Rig.
Redwine et al's No. 1 Badger, C N half SW SW Sec. 4-5-11 .....Drlg. 260 ft.

KAY COUNTY

Blauner et al's No. 1 Maple, NE NW SE Sec. 20-27-4....Drlg. 660 ft.

KIOWA COUNTY

Christian's No. 1 Jones, NE NW Sec. 8-7-18w .....Drlg. 1,702 ft.
McWhirter et al's No. 1 Vanderneck, NE NW Sec. 3-7-19w (O.W.D.D.) .....C.O. 2,035 ft.

LOGAN COUNTY

Gypsy Oil Co.'s No. 1 McConnell, C NE SE Sec. 28-17-4w. Drlg. 3,445 ft.
Shell Pet. Corp.'s No. 1 Faulkner, C SE NW Sec. 11-15-4w Drlg. 4,797 ft.

MURRAY COUNTY

A. E. Harden's No. 1 Sadler, NE Sec. 19-1-2.....Rig.

NOBLE COUNTY

Shell Pet. Corp. 's No. 1 Farr, C NE NE, Sec. 19-20-2w.. Wilcox sand 5,000-27 ft.; S.O.
Sinclair Prairie's No. 1 Jerome, SW cor. Sec. 15-20-2w.. Drlg. 5,204 ft.

OKFUSKEE COUNTY

Natl. Investers' No. 1 Billy, SE NW NW Sec. 29-12-9.... Drlg. 3,033 ft.

PAYNE COUNTY

Kemp & Nunnelee's No. 1 Crane, SW SE SW Sec. 10-17-6 Drlg. 480 ft.
O. N. Maines et al's No. 1 Scheldberg, NW SW NW Sec. 27-22-6 .....Drlg. 1,500 ft.

PITTSBURG COUNTY

Moffett & Hall's No. 1 Jones, C NE NW Sec. 14-8-14 ..Drlg. 1,460 ft.

PONTOTOC COUNTY

Edna Marie's No. 1 McWhorter, NE SE Sec. 11-2-6....Drlg. 788 ft.
Brydia et al's No. 1 Thomas, SW NE Sec. 20-2-7.....Rig.
Gilbert's No. 1 Starritt, NW SE Sec. 28-4-6.....Drlg. 750 ft.
Choctaw O. & G. Co.'s No. 1 Thompson, SW NE SW Sec. 1-1-7 .....Drlg. 675 ft.
Blackwell O. & G. Co.'s No. 1 Abbott, NW SW NE Sec. 14-4-6 .....Sand 1,542-90 ft.; T.D. 1,710 ft.; to P.B. to 1,190 ft; 3,000,000 ft. of gas 1,030-34 ft; comp.
W. E. McGraw's No. 1 Mayhue, NE Sec. 19-2-6.....Drlg. 465 ft.
Williams' No. 1 Kroth, NE SE Sec. 33-3-4.....Drlg. 1,717 ft.
Wirrick's No. 1 Lee, SE SW Sec. 29-2-7 .....Drlg. 988 ft.

POTTAWATOMIE COUNTY

Payne Drlg. Co.'s No. 1 Lovelace, NW SW NW Sec. 27-6-4 Drlg. 3,623 ft.

SEMINOLE COUNTY

Filmlee's No. 1 Bowlegs, SE NE SW Sec. 1-7-7 ..... Drlg. 440 ft.
Armstrong et al's No. 1 Diamond, NE SE SW Sec. 8-6-7.. Spudding.
English et al's No. 1 Harjo, NE SW Sec. 3-8-8.....Abd. 676 ft.
Donnelly et al's No. 1 Shepard, SE NE Sec. 4-8-8.....Sand 1,395-1,405 ft; wtr.; fishing 1,640 ft.

Southern Oklahoma

ATOKA COUNTY

L. E. Stewart et al's No. 1 Stewart, SE SE Sec. 2-4s-10 ..Drlg. 1,607 ft.

CARTER COUNTY

P. Turner's No. 1 Dove, NE NW SE Sec. 3-5-1.....Rig.
E. M. Boring's No. 1 Morgan, C NE NW SW Sec. 4-1s-3w. Showing 12,000,000 ft. gas 2,032 ft; C.O.; set 8-in. 1,798 ft; showing 10 bbls. per hr.; 8,000,000 ft. of gas.

JEFFERSON COUNTY

Abbott et al's No. 1 Simmons, NW cor. Sec. 14-6s-6.....Drlg. 800 ft.
Hobbs' No. 1 Barnett, NE SE SW Sec. 33-5-5w.....Drlg. 2,005 ft.
Wakefield's No. 1 Kelly, NW SE Sec. 1-5-3w..... Drlg. 550 ft.

MARSHALL COUNTY

Thomas' No. 1 Setliff, SW SE SE SW Sec. 36-5-6.....Drlg. 1,110 ft.

STEPHENS COUNTY

Doyle Oil Co.'s No. 1 Cunningham, SE NE NW Sec. 4-1-6w ..... Drlg. 1,915 ft.
Navajo O. & G. Co.'s No. 1 Martin, SE SW NW Sec. 18-1-5w ..... Drlg. 1,750 ft.

TILLMAN COUNTY

Emenheser et al's No. 1 Pace, C SW Sec. 3-4s-17w.....Drlg. 2,832 ft.
Gypsy Oil Co.'s No. 1 Pitcher, NW Sec. 26-4s-15w..... Fishing 2,760 ft.

The 119 wells producing from the Simpson sand zone in the Oklahoma City Field show a decline of only 40 per cent. All of these wells produce clean oil and are free from water encroachment.

In the Wilcox sand zone a total of 418 wells show a net decline of 48 per cent, but a number of wells are yet to be tested and these may increase the percentage of decline.

The largest increase of any well so far tested for potential in the Oklahoma City Field is the Coline Oil Corp.'s No. 13 Clauer, NE cor. NW, Section 25-11-3w, in the south end of the field. It showed a gain of 138 per cent compared to the previous potential. The well made 1,233 bbls. of oil in four hours. The wells in the south end of the field show a smaller decline than those in the north end of the field.

Southern Oklahoma

Southern Oklahoma developments were mostly of a routine nature. Stephens County fields and the Tatums Pool in Carter County were the most active districts. On account of the low price of crude operators in the Tatums Field have slowed down new work.

In Stephens County, L. Sykes and others' No. 3 Furst, SW cor. SE NW, Section 16-1s-8w, made 3,000,000 feet of gas from 2,042-83 feet.

In the Tatums Pool in Carter County, Wirt Franklin Petroleum Corp.'s No. 1 Burton, NE cor. SW SE, Section 31-1s-2w, found the top of the sand at 2,440 feet and was drilling at 2,570 feet.

The Lloyd Oil Co. has taken over the Daphfine Oil Co.'s No. 1 Majors, SE cor. NW SE, Section 25-1s-3w, and is rigging up.

A new wildcat location was announced in Cotton County, U. S. Davis and others' No. 1 Brady, SW cor. NW, Section 1-2s-11w.

In Tillman County, Gypsy Oil Co.'s No. 1 Techner, NW cor., Section 26-4s-15w, was fishing for a bit at a total depth of 2,760 feet.

A. H. Emenhiser and others' No. 1 Pace, C SW, Section 3-4s-17w, Cotton County, has resumed drilling at 2,845 feet. It is a wildcat operation.

An Interesting Test

Amerada Petroleum Corp. and others' No. 1 Mitchell, SE cor. NE SW, Section 15-18-3, Payne County, semiwildcat test is believed to be running high on structure compared to other wells that have been drilled in the vicinity. The well found the top of the checkerboard lime at 3,155 feet, the Oswego lime at 3,470-3,604 feet, the Bartlesville sand at 3,810-73 feet, from which a number of saturated cores were taken. The top of the Mississippi lime was found at 4,030 feet.

The test was drilled on a large block of acreage that had been surveyed with a seismograph. It is located northwest of the Mehan Pool. The owners plan to make a production test of the oil and gas showing in the Bartlesville sand after the well reaches the Wilcox sand.

In the Wentz Pool, in Noble County, the Lucien Consolidated Community's No. 1 E. Farr, C NE NW, Section 19-20-2w, was opened and flowed 197 bbls. of oil in less than an hour. It then filled up slowly and did not flow again. The crew started drilling it deeper and found green shale from 5,027-32 feet. At a total depth of 5,034 feet it swabbed 70 bbls. in three hours.

Shell Petroleum Corp.'s No. 1 M. Farr, C NE SE, Section 19-20-2w, was drilling around 4,000 feet.

Continental Oil Co. and others' No. 1

Bolay, C SW NW, Section 16-20-2w, was drilling with a whipstock at 4,585 feet.

Barnsdall Oil Co.'s No. 3 Waltermire, NW cor. SW NW, Section 33-21-1, in Noble County, in the gas area southeast of Perry, was drilling at 1,515 feet.

Sinclair Prairie Oil Co.'s No. 1 Jerome, SW cor., Section 15-20-2w, was underreaming the 6-inch casing at a total depth of 5,225 feet. It had about 3,500 feet of water in the hole.

Acid Aids Fish Pool Well

The use of acid in declining wells has been proven to be helpful in the case of the Winona Oil Co. and others' No. 1 Amery, SE cor. NW NW Section 29-7-8, in the extreme east edge of the Fish Pool, in Hughes County. This well was drilled to the Wilcox sand at 4,197-99 feet, where it showed water and it was then plugged back to the Simpson sand at 4,153-64 feet, and after a shot made 350 bbls. a day initially. The well then fell off to around 50 bbls. a day. The owners then decided to treat it with acid and on May 5 1,000 gallons was used. It was opened up May 7 and started making 60 bbls. an hour and the next day increased to 70 bbls. an hour.

Kennedy and Horner's No. 1 Jacobs, NW cor. NE NW Section 15-7-8, in the West Holdenville Pool, in Hughes County, flowed 420 bbls. of oil in 17 hours from the Booch sand at 2,913-43 feet.

Cosden Pipe Line Co. is constructing about 10 miles of 4-inch pipe line from the West Holdenville Pool in Hughes County to the Allen Field in Seminole County.

In the Keokuk Falls area of Seminole County, Carter Oil Co.'s No. 1 Conard, CSL SW SE Section 35-11-6, is landing the 6-inch casing at a total depth of 4,341 feet. It will be drilled to the Wilcox sand.

Russell Petroleum Case

A temporary restraining order against the Russell Petroleum Co.'s two wells in the Oklahoma City Field was issued May 6 by Judge R. P. Hill in the district court. Further hearing has been set for May 16. Receivership and accounting is also asked in the case which was filed by Lula M. Caruthers and the Oklahoma County board of commissioners.

The petition cites that approximately 800,000 bbls. of oil was produced from the company's two wells, No. 1 Roosevelt and No. 1 Reno, and sold through the Union Crude Oil Corp. to the Champlin Refining Co. It further alleges that Frank Russell, president of the company, admitted to the State Tax Commission a production of 1,120,000 bbls. of oil from the wells on which the tax had not been paid. This crude oil is alleged to have been sold to the White Oak Corp., John H. Peacock, Inc., the Sterling Refining Co. and the Union Crude Oil Corp.

The defendants in the suit in addition to the Russell Petroleum Co. are Frank Russell, Mrs. Florence R. Fendley, the Central Pipe Line Co., the Union Crude Oil Corp., Champlin Refining Co., the White Oak Corp., J. H. Peacock, the Anglo Refining Co., the Century Petroleum Co. and others.

Oklahoma County owns a royalty interest in one of the wells and recently accepted $5,000 in payment for unreported royalty from one of the wells at a time when receivership action was started.

The two wells of the Russell Petroleum Co. had a potential of 3,643 bbls. on April 1.

Oklahoma County Wildcats

Arrangements are being made to drill another interesting wildcat test along the Nemaha trend in northwestern part of Oklahoma County. R. Lantz and others' No. 1 Price, NE SW Section 19-14-3w, is the proposed location. Operations are expected to start before the first of June.

The location has been discussed for several weeks and this week major oil companies owning acreage in the vicinity decided to join in the operation. It will be a Wilcox sand test.

The location is about 2½ miles northwest of the Mid-Kansas Oil & Gas Co.'s No. 1 Messer, C SW SW Section 32-14-3w which was completed in November, 1930, and has been shut in since. It made 204 bbls. on its initial test from the Wilcox sand at 6,696-6,771 feet. The well was shut down to prevent additional crude oil being put on the overcrowded market and other leaseowners have agreed to withhold further development until the crude oil is needed.

Many believe that the new location and the No. 1 Messer are located along the Nemaha buried mountain ridge, which has yielded considerable oil and gas in the past.

The rig for the wildcat test of the Midcontinental Co.'s No. 1 Edwards, C SE SE Section 19-11-1, near Newalla, in the southeastern part of Oklahoma County, has been erected. The owners plan to start spudding by May 20, and the contract is for 6,500 feet, or to the Wilcox sand horizon. The owners of the offset lease include the T. B. Slick estate on the east, Stanolind Oil & Gas Co. on the south and the Mid-Continent Petroleum Corp. on the southeast. The Sinclair Prairie Oil Co. has a diagonal offset to the southwest. Other companies with acreage in the vicinity include the Shell Petroleum Corp., Mid-Kansas Oil & Gas Co., British-American Oil Co., The Texas Company, Phillips Petroleum Co., Gypsy Oil Co., Sunray Oil Co. and Empire Oil & Refining Co.

Magnolia Petroleum Co. and others have made a location for No. 1 in the SW cor. SE Section 2-14-3w, Oklahoma County.

Caddo County

Abernathy and Brown's No. 2 Houston, SW cor. NE SE SE Section 8-6-13w, 1,121 feet.

Carter County

Daphfine Oil Co.'s No. 3 Majors, SW cor. SE SE Section 25-1-3w, made 646 bbls. in six hours from 2,458-2,631 feet.

Creek County

C. L. Sutton's No. 2 McElroy, SE cor. NE NW Section 7-19-7, is a location. F. O. Akins' No. 1 Tiger, NE cor. SE NE Section 34-18-8, is a rig. Shamblin and others' No. 1 Kelly, SW cor. NE NW Section 2-17-8, is a rig. J. E. Crosbie's No. 5 Escoe, CEL W half NE SW Section 26-18-8, was drilling at 200 feet. Charles Gibbon's No. 1 Vance, NE cor. SW SW Section 6-18-7, was drilling at 500 feet. Doke and Hughes' No. 2 Evans, CEL SE NE Section 30-19-9, made 15 bbls. from 2,378-2,414 feet. Galbraith and Byers' No. 1 Harjo, NW cor. Section 35-18-8, was dry and abandoned at 1,320 feet.

Haskell County

Ault's No. 1 Hall, SE cor. NW Section 25-19-9, was dry and abandoned at 200 feet. Same operators' No. 1 Hall, C NW SW SE Section 14-9-19, was dry and abandoned at 2,000 feet.

Hughes County

Mainard and others' No. 2 Moore, CWL W half NW NE Section 22-7-8, is a rig. Manahan and others' No. 1 Harjo, NW cor. SE NW Section 29-7-8, made 15,000,000 feet of gas a day from 3,111-25 feet. English and others' No. 1 Harjo, NE cor. SW Section 3-8-8, was dry and abandoned at 676 feet.

Muskogee County

Hendrick and Kohn's No. 2 Porter, NW cor. SE NW Section 5-15-17, made 1,750,000 feet of gas from 1,007-21 feet.

Oklahoma County

Mid-Continental Co.'s No. 1 Edwards, C SE SE Section 19-11-1, is a location. Phillip Petroleum Co.'s No. 2 Berg, NE cor. NW SW Section 26-11-3w, made 4,040 bbls. from 6,564-6,645 feet. Wofford Drilling Co.'s No. 1 Garvin made 2,892 bbls. in four hours from 6,359-6,505 feet.

Okmulgee County

J. Penrod, Inc.'s No. 1 Alexander, SE cor. NW NE Section 14-13-13, was dry and abandoned at 1,870 feet. J. E. Wallace's No. 1 Bassett, SE cor. NE NE Section 15-14-14, made 6 bbls. from 1,768-88 feet. English and Henderson's No. 1 Jefferson, SE cor. SW NW Section 36-15-14, was dry and abandoned at 1,723 feet. R. G. Berry's No. 13 McIntosh, NW cor. SW Section 28-15-14, an old well drilling deeper, total depth 1,710 feet. Papoose Oil Co.'s No. 6 Osborne, NE cor. SW Section 21-15-14, was drilling at 2,520 feet.

Osage County

Lewis Production Co.'s No. 1, SE SW Section 21-24-7, is a rig. Magnolia Petroleum Co.'s No. 1, NW cor. NE SE Section 22-26-6, made 25 bbls. from 2,965-3,015 feet. Bay Oil Co.'s No. 1, NE cor. NW Section 36-24-7, made 17 bbls. from 2,907-29 feet. Indian Territory Illuminating Oil Co. and others' No. 1, NW cor. SW Section 19-24-8, was dry and abandoned at 750 feet.

Pottawatomie County

Magnolia Petroleum Co.'s No. 1 West, SE cor. NE Section 26-6-4, is a rig. Watchorn Oil & Gas Co.'s No. 1 Zoller, NW cor. SE Section 5-6-5, made 425 bbls. from 4,093-4,125 feet, total depth 4,364 feet.

Pontotoc County

Ligon and others' No. 1 Taylor, SE cor. NE SE Section 29-5-5, made 250 bbls. from 2,190-2,485 feet. Blackwell Oil & Gas Co.'s No. 1 Abbott, NW cor. SW NE Section 14-4-6, made 3,000,000 feet of gas from 1,030-34 feet, total depth 1,710 feet.

Stephens County

Harvey & Stone's No. 1 Penneston, SE cor. NW SE Section 17-7-5, is a rig. Farlyn Oil Co.'s No. 9 Seay (twin), CNL SW SE Section 3-7s-5w, is drilling at 700 feet. Same operators' No. 8 Seay, CNL SW SE Section 3-7s-5w, made 90 bbls. from 1,244-55 feet.

Tulsa County

Holmes and others' No. 1 Graves, NE cor. NW SE Section 30-19-10, made 5 bbls. from 2,245 feet. H. W. Bowder's No. 1 Hodge, NE cor. SW NE Section 5-17-14, was dry and abandoned at 1,560 feet.

Wagoner County

J. W. Halderman's No. 2 Taylor, CSL SW NE Section 24-18-15, is a machine. R. Gaffrey's No. 2 Norfer, C SE SE Section 14-18-15, is a rig. Same operator's No. 3 Norfer, NW cor. SE SE SE Section 14-18-15, is a machine. Dunbar and others' No. 1 Roberts, NE cor. NW SW Section 14-18-15, was dry and abandoned at 1,550 feet. Diller and others' No. 1 Luckey, SE cor. NE SW Section 15-18-15, was dry and abandoned at 1,041 feet. B. G. Goble's No. 1 Murphy, NW cor. NE NE Section 1-17-15, was dry and abandoned at 1,130 feet. O. K. Detrick's No. 1 Sarty, NE cor. SE Section 21-17-16, made 30 bbls. from 1,038-51 feet. Aggis Drilling Co.'s No. 1 Davis, SE cor. Section 17-16-15, was dry and abandoned at 1,482 feet.

IMPORTANT BOOKS
for the Oil Man's Library

"NATURAL GAS HANDBOOK"

Natural gas, which the Magi of Asia worshipped in the form of eternal fires that blazed from gas escaping from fissures in the ground along the Caspian Sea, centuries before the birth of Christ, is now in common use for industrial and domestic purposes in many places located more than 1,200 miles from the fields where it is produced.

The use of natural gas is, in fact so common that it has become recognized as one of the modern conveniences in the home and accepted as one of those necessities which were regarded as a luxury even a few years ago. However, the many details that are involved in the development, production, transportation and marketing of this commodity are very interesting and even the consumers should find some interest in studying about them.

In the "Natural Gas Handbook," John C. Diehl has assembled many facts about this industry that are of interest to production men, distributors and consumers alike.

The history of gas and the natural gas industry are covered in an interesting manner, as well as the properties and pressures of fluids and the laws of perfect gases. Details of transportation systems and equipment used are covered in a very comprehensive way and much highly valuable technical data is also included.

"Natural Gas Handbook" has long been recognized as an authoritative book on this subject, and Mr. Diehl in the edition of 1929 has brought the work of the former authors up to date. The book contains over 575 pages and is fully illustrated. It contains numerous diagrams, charts and tables that are of special interest to the technician, but will also furnish the layman information which will give him an insight into the details of this great industry that should be both valuable and interesting to him.

In the final chapters of the book much information has been assembled that deals with the actual use of natural gas for both industrial and domestic purposes, and this data should be of value to all consumers. Large users of gas should be especially interested in this section of the book, as it deals with many of their problems in detail and gives many facts that should aid in efficient use of this type of fuel.

"Natural Gas Handbook" may be purchased through the Book Department of The Oil and Gas Journal at the regular postpaid price of $7.50, payable by check or money order when book is ordered.

Advertising Aids Sales During the Depression

Loss of contacts as a result of a large turnover in industrial personnel during the depression has made advertising more effective than salesmanship, L. S. Hamaker, sales promotion manager of the Republic Steel Corp., told the industrial advertisers group of the Advertising Club at a luncheon in New York recently.

Mr. Hamaker said many of the present buyers of industrial equipment and materials, who were subordinates before the depression, are now "the younger executives, sweeping with new brooms." Of 4,200 contractors on large projects in 1930, he said, 67 per cent were without contracts in 1931, and only 6 per cent of 3,100 contractors on sizable jobs in 1931 were working in 1930.

"That is where advertising fits in," he said. "Firms are spending too much in expensive salesmanship, trying to catch up with rapidly moving personnel. Advertising gets to places the salesman would not think of going and could not go if he wanted to. Consistent advertising is the very best insurance for the future."

Stafford County Wildcat Makes Good Showing; Kansas Producers Are Permitted to Shut In

By W. A. SPINNEY
Staff Correspondent, Kansas Fields

The feature of the week in Kansas was supplied by a wildcat well in Stafford County which swabbed 240 bbls. of oil the first 24 hours. The well is the Atlantic Oil Producing Co.'s No. 1 Gates, NW cor. SE Section 27-21-13w. Production was found at 3,698-3,704 feet in Siliceous lime.

The well is located in the center of a 5,000-acre block controlled by the Atlantic Oil Producing Co., and it was drilled after a core-drilling and seismograph survey of the area. It is located about 9 miles northwest of the Richardson Pool, in eastern Stafford County.

The average daily production of various important pools in the State for the week ending May 13 was as follows:

Pool—	Bbls.
Hollow	7,810
Ritz-Canton	20,700
Voshell	7,070
Sedgwick County	11,535
Mabee (Nikkel)	6,485
Ellsworth County	1,935
Barton County	695
Rice County	3,605
Reno County	1,850
Stafford County	230
Total	61,915
Others	54,085
Total State	116,000

Permission to Shut In

Governor Landon and the Kansas Corporation Commission decided against the issuance of an order shutting down the prorated fields in the State. The commission instead issued an order permitting producers to shut in temporarily in the prorated fields with an understanding that proper adjustment will be made later.

The announcement of the decision was made by Chairman Hoch, of the commission, after a conference with the governor. He said that while some of the producers urged an order shutting down all the oil wells in the State as a protest against the 25-cent market price, it was decided after careful consideration that no such action be taken at present.

Chairman Hoch announced that while the present condition existed the commission did not intend to permit any increased withdrawals of crude oil from the various pools, and that applications to that end would be denied for the present.

He also said that a survey of the refineries in the State would be made to determine their present stocks of oil and gasoline with the view to determine their present and prospective needs.

The areas that have been most affected by operators shutting down are in McPherson County, which has been the most active area in the State. It was announced that a number of wells in the Ritz-Canton Field are shut in and a number of drilling tests shut down.

The order of the Kansas Corporation Commission permitting the operators to shut in their wells was issued on application of the Oil Advisory Committee. The order stated that many of the producers in the prorated area are unable to continue producing crude oil under the existing economic conditions and that the production of crude oil and petroleum produces economic waste and waste incident to the production of crude oil or petroleum in excess of the transportation or marketing facilities and reasonable market demand.

The commission ordered that "any producers of crude oil or petroleum in the prorated areas of the State may, upon filing written notice with the state oil umpire, withhold production from the allowed market under existing conditions, and accumulate thereby a shortage to the amount of the difference of crude oil not marketed and the daily allowable, and that such accumulated shortage of crude oil or petroleum may be made up at a later date to be hereinafter determined by the commission, and the accumulated shortage shall be allowed to be marketed and equalized as hereinabove specified."

The commission also ordered that no increase in allowables shall be given to any well or wells in the prorated areas of the State until further notice of the commission.

In Central Kansas Pools

In the Hollow Pool, in Harvey County, The Texas Company's No. 1 Andrees, in Section 8-22-3w, found chat at 3,157-66 feet and the crew was rigging up standard tools.

Continental Oil Co.'s No. 1 Paul, in Section 17-22-3w, was treated with acid in the Hunton lime at 3,491-3,506 feet. It swabbed 144 bbls. of oil in 24 hours.

Derby Oil Co.'s No. 2 Schmidt, in Section 17-22-3w, found about 250,000 feet of gas in the chat at 3,169 feet and will drill to the Hunton lime.

Hollow and others' No. 2 Schmidt, Section 17-22-3w, had 61,000,000 feet of gas in the chat at 3,222 feet and it will be mudded off and drilled to the Hunton lime.

Olson and others' No. 1 Garvin, in Section 35-23-4w, in the Burrton district of Reno County, made 10 bbls. of oil from the chat at 3,334-73 feet and will be given a production test.

Johnson and others' No. 2 Shaw, in Section 21-19-1w, in the Ritz-Canton Pool in McPherson County, made 32,000,000 feet of gas from the chat at 2,959 feet. It will probably be completed as a gas well.

Rice and others' No. 2 Wiles, in Section 25-19-2w, in the Ritz-Canton Field, swabbed 170 bbls. of oil from the Viola lime at 3,402-05 feet in 15 hours.

Lario Oil & Gas Co.'s No. 2 Lewis, in Section 36-19-2w, pumped 903 bbls. of oil in 48 hours and was given a potential of 451 bbls. in 24 hours from the Viola lime at a total depth of 3,390 feet.

In the Voshell Pool, in McPherson County, Mylius and others' No. 2 Regier, in Section 16-21-3w, was swabbing 25 bbls. of oil an hour from the Viola lime at 3,373-3,434 feet.

Skelly Oil Co.'s No. 1 Schmidt, in Section 17-22-3w, in Hollow Pool in Harvey County, swabbed 110 bbls. of oil in one hour from the Hunton lime at 3,430-42 feet.

Skelly Oil Co.'s No. 2 Martins, in Section 19-22-3w, in the Hollow Pool, flowed 40 bbls. of oil after being treated with acid from the Hunton lime at a total depth of 3,484 feet.

Sinclair Prairie Oil Co.'s No. 1 Ediger, NE cor. SW, Section 19-22-3w, in the Hollow Pool, in Harvey County, extended production to the west. It was swabbing at the rate of 10 bbls. an hour from the Hunton lime at 3,382-3,418 feet. The oil rose 1,800 feet in the hole before it was swabbed. This well will force three other offsets.

A number of dry holes were found during the week in the chat formation in the Hollow Pool, these wells being drilled to the Hunton lime.

Sinclair Prairie Oil Co.'s No. 1 Neufeldt, NE cor. SE, Section 18-22-3w, is a rig. It will be drilled with rotary tools.

Shell Petroleum Corp.'s No. 1 Nikkel, NE cor. SE SW, Section 8-22-3w, made 280 bbls. in 20 hours from the chat formation.

W. E. McBride, Inc.'s No. 2 Schmidt, NW cor. NE NE, Section 30-22-3w, was drilling deeper at 3,242 feet. This test found the chat dry.

Stanolind Oil & Gas Co.'s No. 2 Froese, NW SW NE, Section 20-22-3w, was drilling at 3,286 feet. The top of the chat was found at 3,175 feet.

Darby Petroleum Corp. and others' No. 2 Shaw, SW cor., Section 21-19-1w, is a 30,000,000-foot gas well in the Ritz-Canton Field, McPherson County. The gas was found in the chat at 2,930-50 feet, no oil was showing in the hole and it will probably be completed as a gas well.

Production and Shipments

The potential production of the Ritz-Canton Field in McPherson County shows an increase in April over March. The potential of the field is 41,652 bbls. a day from 182 wells. The deep sand area with 114 wells, has a potential of 37,121 bbls. and the chat formation, with 68 wells, 4,531 bbls.

Nominations in this field for April ranged from 40 to 56 per cent of the potential. The total amount of oil shipped from the field during April was 650,316 bbls., an average of 21,677 bbls. per day.

Potential production in the Voshell Pool, in McPherson County, during April was 15,574 bbls. daily. The 100 deep sand wells have a potential of 14,560 bbls. and the 17 chat wells 1,014 bbls. The daily allowable during the month was 46 per cent from April 1 to 19, and 35 per cent from April 21 to 30. The pipe line shipments from the field totaled 232,465 bbls. or a daily average of 7,749 bbls.

The 18 producers in the Mabee (Nikkel) Pool, in McPherson County, have a potential of 22,044 bbls. daily. The allowable production from this field during April was 37 per cent of the potential. The pipe line shipments from the field totaled 229,289 bbls.

In the Johnson Pool, in McPherson County, the daily allowable has been 250 bbls. per well per day, giving the 17 wells an allowable of 4,250 bbls. The pipe line shipments from this field totaled 68,884 bbls. during April.

The Hollow Pool, in Harvey County, produced a total of 220,168 bbls. in April. The 25 wells were allowed 375 bbls. per day each from April 1 to 6, and 333 bbls. from April 7 to the close of the month. The allowable was reduced to 300 bbls. per well May 5.

The Siliceous lime areas in the central western part of the State where 61 wells have been completed with a potential of 44,272 bbls. daily shipped 181,242 bbls. of oil during the month of April. Potential tests were taken on all wells in the Stratum area in Ellsworth County during April.

Meager Results in Greenwood

Derby Oil Co.'s No. 4 Beavers, SE cor. SW SE, Section 25-24-12, southeast of Virgil, in Greenwood County, is estimated at 20 bbls. a day from the sand at 1,663-75 feet. It was given a shot and was cleaning out.

Oko Oil Co.'s No. 7 Keubler, CEL NW NE, Section 15-23-13, northeast of Virgil, is estimated at 3 bbls. a day from the Mississippi lime at 1,780-99 feet. It was shot with 40 quarts.

Two dry holes were found in Elk County, Davidson and others' No. 1 Fear, SE cor., Section 20-29-12, found water at 1,896 feet and was abandoned. J. Hayes' No. 1 Palmer, NE cor. NW, Section 26-29-10, was plugged at 1,976 feet.

Barton County

Noble Drilling Co.'s No. 1 Grant, C SW SW Section 4-20-11w, made 12 bbls. from 3,305-35 feet. Slick, Pryor and Lockhart's No. 1 Andrea, SE cor. NE

(Continued on Page 92)

Wildcat Operations in Kansas

(Descriptions are East unless marked otherwise)

BARTON COUNTY

Company, farm and location—	Remarks:
Noble Drlg. Co.'s No. 1 Grant, SW SW Sec. 4-20-11w	T.D. 3,362 ft; P.B. to 3,325-35 ft. pumped 12 bbls. daily.
Rankin et al's No. 1 Sooeg, C SW NE Sec. 34-18-12w	Drlg. 2,980 ft.

COWLEY COUNTY

E. Yarnell's No. 1 Speer, SE NE NE Sec. 31-33-6	Rig.

ELK COUNTY

Austin et al's No. 1 Wade, C NE NE Sec. 9-29-12	Drlg. 1,680 ft.

ELLSWORTH COUNTY

Rex Etnyre's No. 1 Arnsman, C SW SW Sec. 10-15-7w	Rig.

GRAHAM COUNTY

Schleimeyer et al's No. 1 Smith, SE Sec. 24-8-25w	Fishing 4,180 ft.

GREENWOOD COUNTY

Reeser & Chriswell's No. 1 Wright, C SW SW Sec. 28-25-10	Spudding.
Wright's No. 1 Madren, SW SE SW Sec. 29-22-12	Machine.
Knight et al's No. 1 Moser, NE SW SW Sec. 33-22-12	Drlg. 1,200 ft.

McPHERSON COUNTY

Sever and Hessman's No. 2 Scrag, S½ SE Sec. 22-19-4w	Rig on ground.
Darby Pet. Co.'s No. 1 Bruckey, NE NW NE Sec. 24-19-1w	Drlg. 3,060 ft.
Gaume & Maxwell's No. 1 Goering, NE SE SW Sec. 24-23-3w	Rig.
Investers Mineral Dev. Co.'s No. 1 Kaufman, SE Sec. 35-21-3w	Rig.
Roth & Farout's No. 1 Swanson, NE SW NE Sec. 13-19-3w	Rig.

PRATT COUNTY

Ninnescah O. & G. Co.'s No. 1 Hardesty, SW SE SE Sec. 28-27-11w	Drlg. 4,080 ft.

RENO COUNTY

Roth & Farout's No. 1 Yoder, C NW NW Sec. 15-24-5w	C.O. 325 ft.

RICE COUNTY

Langston et al's No. 1 Wells, NE SE Sec. 4-20-9w	Drlg. 1,725 ft.

ROOKS COUNTY

Kruger's No. 1 Rathburn, SE NW SW Sec. 14-9-16w	Rig.

SALINE COUNTY

Dieter, Warren and Lario O. & G. Co.'s No. 1 Fulton, SW NW Sec. 14-16-2w	Drlg. 2,900 ft.

SEDGWICK COUNTY

Carter Oil Co.'s No. 1 Rowley, C E½ NE NE Sec. 30-25-2.	Drlg. 3,267 ft.

STAFFORD COUNTY

Atlantic Oil Prod. Co.'s No. 1 Gates, NW SE Sec. 27-21-13w	Drlg. Sli. 3,679-3,704 ft; 10 bbls hourly.

SUMNER COUNTY

Deal O. & G. Co.'s No. 1 Tompkins, SW cor. Sec. 26-33-1.	Drlg. 3,665 ft.

Wilkins Seacord and Montex Oil Completions Extend Fields in Duval and Webb Counties

By B. D. STEVENSON
Staff Correspondent, Southwest Texas Fields

SAN ANTONIO, Tex., May 15.—Wilkins Seacord has extended the North Government Wells Field in Duval County a half mile southwest by completing his No. 2 Lundell as a big gas well spraying oil and producing from the Government Wells sand at 2,322 feet, and Montex Oil Co. has given the Dyck or south extension of the Laurel Field in Webb County an extension to the east with the completion of the No. 1 Garcia-Villareal in the southwest corner of Survey No. 720, producing about 500 bbls. daily on choke and estimated as a 1,000-bbl. well on open flow and producing according to conditions before proration days.

Along with these as features of the week Sarnosa Oil Co. got a good well on the east edge of Sarnosa Field and Shasta Oil Co.'s No. 1 Erigan in the Saxet Field in the 4,877-foot sand is a 300-bbl. well on choke, the first good well in that sand after several failures in the field.

Still another feature of the week is O. W. Killam's No. 5 Bruni in northern Zapata County 2 feet in an oil sand at 1,830 feet with casing set and likely to open a new pool about 4 miles west of the original Mirando Valley Pool that Killam discovered more than 10 years ago.

Seacord's No. 2 Lundell, 150 feet from the north and east lines of Survey No. 48 in Duval County, went into the gas sand two months ago and had been standing till recently when casing was set and it was completed. It has a pressure of 850 pounds and is being opened every day in the thought that it will blow in an oil well when a little of the gas pressure goes off. A story is out that the east half of the northeast quarter of the survey, including this test, has been sold to Smith & Story of Tulsa but none of the principals could be reached to confirm it.

Ownership of Adjoining Acreage

All the acreage between this well and the field is owned by the Magnolia Petroleum Co., also that directly north and that directly east and northeast as well, and if the gas well turns to an oil well it will require three offsets by the Magnolia but may not result in any further drilling in that direction. The acreage southwest is owned by Wilkins Seacord, excepting the acreage that he may have sold to Smith & Story.

With the completion of this well the North Government Wells Field now lacks only about 320 feet of being 4 miles long from the Wilkins Seacord No. 2 Lundell on the southwest extremity to the Humble's No. 3 Hahl on the northeast.

Last week the Sun Oil Co. completed its No. 1 Weiderkehr in the north part of the field, a west offset to some producers, and it has made a small well thus far. The Texas Company's No. 7 Wendt in the north part of the field was completed at 100 bbls. of oil and a big volume of gas, so much gas that there seems no indication of any sidewise extensions at that end of the field. However, northeast and southwest there is nothing yet to indicate limits of the field. On the northeast for another half mile all the acreage belongs to the Humble.

In the Laurel Field the Dyck Oil Co. several months ago brought in the south extension with a big well and other big wells were drilled as immediate offsets north, east and south. After that they were small and two dry holes were drilled on the east. It looked like a pimple. Now the Montex Oil Co.'s No. 1 Garcia-Villareal, carried also as the M. Stein No. 1 Garcia Villareal, in the southwest corner of Survey No. 720 and about 750 feet farther east, comes in for a 500-bbl. well on choke. Just what it all means is not clear. It is southeast of the first wells in the Laurel Field.

Somewhat of a surprise also is the Sarnosa Oil Co.'s No. 6 Weil on the east edge of the Sarnosa Field, estimated at 20 bbls. an hour.

New Field Promised

In northern Zapata County 4 miles west of the Mirando Valley Field O. W. Killam on the Borrego grant drilled four holes during the last two years on what gave evidence of being a structure. Last week he went 2 feet into an oil sand at 1,830 feet and set casing. It gives every promise of opening a new field. Some estimates are on the basis of a rather small field, but that remains to be proven. A few miles west of it the National Oil Co. a few years ago found a structure and got a lot of shallow gas. It did not develop the area further but holds the acreage. Last week on the west side of this acreage and on part of the block A. H. Wray got a gas blowout at 370 feet, while coming out to change bits. It was a big enough blowout to be of consideration though not enough for commercial purposes possibly.

In the south end of the Escobas Field Roscoe has completed a 25-bbl. well on t[illegible] Bustamente lease, one of the farthest so[illegible] wells in the field, and in sand at 1,242 feet. The south end of the field is producing mainly from a sand 200 feet or more deeper than this. The discovery well at the north end of the field and most of the production at the north end are from this shallower sand.

Garrett, Lefevre and Spice's No. 1 M. Garza heirs, 2 miles east of the south end of the field, is drilling at 1,800 feet. There are sand possibilities below that, but the main sand it was shooting at around 1,600 feet was dry.

Edwin M. Jones may drill some shallow holes before going on down with his deep test in Webb County, some 20 miles west of production. He is scheduled to make one deep test which may go to 10,000 feet if conditions warrant, but the hole he is now working on may be left at shallow depth till others are drilled. The structure is an enormous one from surface indications, but with nothing thus far but surface geology to work from.

Webb County Wildcat

In northeastern Webb County, Seagraves and Salsbury have moved west and are starting their No. 2 Gates after abandoning their No. 1. It is the only wildcat in that part of Webb County at the present time that is of particular interest.

A new wildcat entered the territory the past week. J. W. Edwards made location for his No. 1 Volpe Brothers in Section 17, Block 2, of the C.C.S.D.& R.G.N.G. Survey, which is 2 miles northwest of the Carolina-Texas Pool. Edwards has also made a wildcat location in Zapata County 150 feet from the south and east lines of Block 8, Survey 116, on the northeast edge of the old Mirando Valley Field.

Other than the Shasta Oil Co.'s No. 1 Erigan mentioned above the Saxet Field the past week had little of interest except that the Sinclair-Prairie No. 1 Issencee looks like it had gone past the 4,800-foot sand without getting anything. It is a half mile or more from any other well in that sand and at 4,881 feet it was arranging to test a sand, but failed to get anything and was last reported at 4,900 feet and making hole.

Magnolia Well Abandoned

In the Balcones Fault the past week with the official abandonment of the Magnolia's No. 1 Williams at the south end of the Darst Creek Field there was left little of interest in wildcat circles. The Thomson No. 1 Lawler, a crevice well, is standing with a lot of oil in the hole but fails to flow and is waiting for pump. It is a little southeast of the northeast end of the Luling Field. In the Hilbig Field Humble Oil & Refining Co.'s No. 2 Hassler is a big well with initial flow of around 100 bbls. an hour, the biggest completion in the field. It is located between two producers. The company has made location for the No. 2 Friske.

Moca Oil Co.'s No. 4 in northeastern Webb County came in a big gas well at 1,214 feet. The oil sand of the discovery well is at 909 feet. This seems to be something new. The three other producers of the field are all at about 909 feet.

Humble has abandoned its No. 1 Imogene Hall, which tested salt water when plugged back to sand at 2,754-76 feet. It is in Bee County, southwest of the Pettus Field. No announcements have been made of additional drilling.

On the east edge of the Riddle Pool in southern Bastrop County, Witherspoon has a showing of oil in Serpentine in the No. 1 Harris and set casing.

There is to be a new test to the Edwards in southern Bexar County carried as the O. N. Beer's No. 1 Kearney. It will probably start drilling in a few days. In making the location benefit was taken of the information furnished by some tests drilled around it which seem to indicate a 400-foot fault displacement.

Late Completions

O. W. William's No. 5 Bruni in Zapata County at 1828-1842 feet completed late in the week came in for 30,000,000 feet of gas daily. It is a wildcat.

Magnolia Petroleum Co.'s No. 3 Ruiz in the Sarnosa Field at 2,466 feet was completed for 100 barrels daily.

Moca Oil Co.'s No. 4 Duval County Ranch Company in northeastern Webb County at 1214 feet came in for 20,000,000 feet of gas. The four oil producers which, with this gas well, constitute the field are producing at 909 feet. No. 4 is spraying oil when opened.

Wildcat Operations in Southwest Texas

Week Ending May 13

Company, farm and location—	Remarks
ATASCOSA COUNTY	
A. Blume's No. 1 Shaw, 690 ft. from N line, 1,780 ft. from E line of 100-ac. tract in W. Farquhar Sur. No. 275	T.D. 1,603 ft; waiting on csg.
O. W. Killam's No. 1 Seitz, 1,700 ft. from NE line, 5,150 ft. from NW line of Cruz Landin Sur. No. 45	T.D. 3,261 ft; drlg.
Potter's No. 1 McCowan	Moving in.
BASTROP COUNTY	
Champion's No. 1 Rivers, center W½ of 800-ac. tract in Osborne Sur.	T.D. 2,235 ft; in Edwards.
J. E. Emanuel's No. 1 H. Klemm, 317 ft. from W line, 300 ft. from S line of tract in R. S. Teal Sur.	T.D. 263 ft.; resumed drlg.
Marts and Beavens' No. 1 Reyes, 750 ft. from W line, 150 ft. from S line of 48-ac. tract in Addison Lytton League	T.D. 1,850 ft; cored Serpentine from 1,705 ft.
BEE COUNTY	
Humble Oil & Refining Co.'s No. 1 Imogene Hall, 1,815 ft. from SW line, 330 ft. from SE line of tract in Thomas J. Butler Sur.	T.D. 4,175 ft; abd.
John O'Neil's No. 1 Plummer, in NW part of county, 150 ft. from N and E lines of 640ac. tract in Sec. 34, Chessman Sur.	T.D. 3,660 ft; drlg.
BEXAR COUNTY	
C. I. Albertson's No. 1 Vogt, 2,100 ft. from N line, 240 ft. from E line of 237-ac. tract in Sec. 2 of S. McCollough Sur. No. 53	T.D. 510 ft; drlg.
Wm. V. Ballard's No. 1-A San Antonio Land & Dev. Co., 1,000 ft. from N line, 450 ft. from W line of tract in I. Perez Sur.	T.D. 1,154 ft; going on pump.
O. N. Beer's No. 1 S. W. Kearney, 150 ft. from S and E lines of 28-ac. tract in S. C. I. Perez Sur.	Rigging up.
R. S. Boling's No. 1 J. J. Appelt, 150 ft. from N and W lines of tract in M. Uriegas Sur.	T.D. 330 ft; pulling csg.
E. R. Byrd's No. 1 W. H. Russell, 750 varas from NE line, 54 varas from NW line of Fernandez Rodriguez Sur.	T.D. 1,340 ft; drlg. Buda lime.
LaSalle Oil Co.'s No. 1 City Sewage farm, 150 ft. S of Rilling Road, 450 ft. W of NE cor. of tract in D. Bustillos Sur.	Spudded in.
Motes-Campbell's No. 1 Pruitt, 550 ft. NE of Trussell's No. 1 Pruitt, 54 varas from E line of tract in Samuel McCollough Sur.	T.D. 1,065 ft; changing to rotary.
O. L. Ray's No. 1 Thos. Dillon, 1,500 feet from NW line, 1,750 ft. from most southerly SW line of de Luna grant in southern part of county	T.D. 680 ft; drlg.
J. Morgan Russell's No. 2 Brotze, 200 ft. W of No. 1, in Cordenas Sur.	T.D. 340 ft; drlg.
Earl S. Post's No. 1 Bilharts, 1,265 ft. from W line, 2,160 ft. from S line of 335-ac. tract in F. Rolen Sur. No. 48	T.D. 784 ft; making heads.
Tipton's No. 1 Gembler, 514 ft. from W line, 616 ft. from N line of 120-ac. tract in M. Gotari Sur.	Spudded in.
Milo Trussell's No. 1 K. K. Harring, in J. Cantu Sur.	T.D. 1,350 ft; S.D.
BLANCO COUNTY	
H. T. McGee's No. 1 Glasscock, center Sur. 167	T.D. 1,580 ft; fishing for fishing tools.

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Fixing of Flat Price for Oil Has Little Effect on Operations in North Louisiana and Arkansas

By D. H. BANCROFT
Staff Correspondent, Louisiana-Arkansas

SHREVEPORT, La., May 15.—Abolition of gravity schedules and establishment of a flat price of 25 cents per barrel on all North Louisiana and Arkansas crudes except Smackover and Urania, quoted at 20 cents and 15 cents, respectively, does not seem to have had any immediate effect on either new work or daily average runs from the field. Ten new operations were begun in Louisiana territory, five of them in Zwolle and the others scattered in various parishes. One new one was staked in Columbia County, Arkansas, and two in Mississippi, one of the latter a wildcat and the other in the Rankin County side of the Jackson gas field. Twenty-three completions were listed, all but four of them failures. Daily average runs from the field totaled 57,380 bbls., a decline of 1,135 bbls., which is no larger than declines during other weeks under normal circumstances. Opinion seems to be that the present price situation is only a matter or 60 or 90 days.

NORTH LOUISIANA

Petroleum Industries, Inc., has turned its block centering on Section 13-5-2e, Rapides Parish, with the proposed 3,500-foot well, to G. J. Smith, T. G. Kelly and J. E. Burke, of Tulsa, retaining an undivided interest, and the purchasers in turn have sold an undivided interest in the block and completed well. Contract calls for operations to begin not later than May 15.

The same Tulsa operators have blocked 10,000 acres solid, except for a few scattered small tracts, centering on Sections 37 and 34-1n-5w, Vernon Parish, for a 5,500-foot test to be begun in the near future. The block was secured from the Fullerton Mineral Co. of St. Louis, Mo.

As the week ended, Lambert and others were testing No. 1 Edwards, SW NW Section 29-9-13, Sabine Parish, a mile southeast of the Converse discovery well, and appeared to have about a 50-bbl. producer from around 2,100-2,200 feet.

Among the new locations listed was that for the deep test in the old Haynesville Field of Claiborne Parish, Louisiana, that has been shaping up for the last few weeks. It will be drilled by the Haynesville Partnership, composed of land and royalty owners in the field, and, located in the NW SW Section 24-23-8 on the north edge of Haynesville townsite, and will go to 4,700 feet. Five or six years ago Ramsey Petroleum Co. drilled a well on the north edge of the field to around 4,800 feet and developed a 30-bbl. pumper which is still pumping at that rate. United Gas Public Service Co.'s No. 1 Meadows, a wildcat in Section 13-21-5, Claiborne Parish, was coring red shale at 5,392 feet and its No. 1 Temple, Section 21-23-7, Claiborne Parish, was coring at 4,341 feet after a drill stem test at 4,240-4,296 feet developed 12 thribbles of salt water in 15 minutes.

Other Operations

The same company's No. 1 Holt, Section 32-23-16, Rodessa gas district of Caddo Parish, was drilling at 4,860 feet. Louana Oil & Gas Co.'s No. 1 Sharpe, NW SW Section 11-18-16, Blanchard gas district of Caddo, got salt water on drill stem test at 2,792 feet and was abandoned. Pyramid Oil & Gas Co.'s No. 1 Shuttleworth, Section 3-18-16, was completed as a 10,000,000-foot gas well at 2,792 feet. Southland Drilling Co. abandoned No. 1 Ross-Olive, Section 10-9-10, Natchitoches Parish, inactive since last December, at 2,150 feet. T. G. Shaw's No. 1 Wilkinson, NE SE Section 4-12-10, Red River Parish, in oil producing territory, made a 20-bbl. pumper at 2,730 feet. E. T. Oakes' No. 1 Bryant and others, Section 30-13-15, DeSoto Parish, was reaming at 4,520 feet to set casing, total depth 4,660 feet. Jack Whitson's No. 2 Sanders, Section 19-11-13, De Soto Parish, was drilling chalk at 1,716 feet. No. 1 Sanders, on the same "forty," gave signs of being a producer but was junked and abandoned. P. B. Dyer has derrick up for No. 1 B. F. Jenkins in the NW SW Section 35-13-12, De Soto Parish.

United Gas Public Service Co. made locations for two or three new wells to be drilled in the Monroe gas field, both in Morehouse Parish, No. 2 Taylor-Sandidge and No. 2 Patton, both in Section 12-20-4e. Hinchey and others made location for No. 1 Murphy in the SW SW Section 40-4n-4w, Rapides Parish.

Besides the Lambert well in Converse, three others were of interest. Chief Oil Co. topped chalk at 1,820 feet in No. 1 Bowman-Hicks Lumber Co., NE NW Section 36-9-14, and shut down at 2,050 feet, and A. C. Scott's No. 1 Burkett, NW SW Section 10-9-13, is arranging to set 6⅝-inch at 1,804 feet after a drill stem test at 1,833 feet developed 1 fourble of oil and 6 fourbles of mud.

The five new locations in Zwolle district of Sabine Parish were: Loring Oil Co.'s No. 1 W. M. Cooper, SE NW Section 36-8-12; Ben Merritt and others' No. 1 H. A. Cook, SE SE Section 34-8-11; Bryant & Lucas' No. 1 Andries, NW SE Section 15-7-11, began drilling May 7, set 10-inch at 41 feet and shut down; E. F. Neely is moving in rig to drill No. 1 Garner, SW NE Section 15-7-11, and Service Drilling & Royalties Co.'s No. 4 E. E. Smith, SW SW Section 7-7-10, is a derrick.

Three Completions Abandoned

Three of Zwolle's nine completions, all failures, were abandoned as locations after a storm toppled the derricks. They were Alford & Avant's No. 1 J. J. Small, NE NW Section 18-7-10; Scully & Beach's No. 4 Lafitte, SW NW Section 13-7-11, and No. 5 Lafitte on the same "forty." The others were: E. D. Holcomb's No. 2 Quayhayden, SE SE Section 11-7-11, which was waiting on standard rig at 2,652 feet, was abandoned, won't pump; Loring Oil Co.'s No. 22 Bowman-Hicks, NW NW Section 5-7-12, dry at 2,750 feet; H. C. Moulding's No. 1 Brumley, NW NW Section 2-7-11, dry and abandoned at 2,600 feet after a shot of acid failed to improve matters; Richey Production Co.'s No. 1 Stille, SE NW Section 36-8-11, dry at 1,510 feet; Roshko & LaBarre's No. 1 Maines, SE NE Section 35-8-11, showed oil, tested dry, abandoned at 2,695 feet; Triangle Drilling Co.'s No. 1 Louisiana Long Leaf Lumber Co., SE SE Section 11-6-11, dry at 4,013 feet. In Converse area Joe Modisette's No. 2 Frost Lumber Industries, NW NW Section 21-9-13, a quarter mile east of his producer in Section 20-9-13, was dry and abandoned at 2,262 feet, base of the chalk 2,240 feet. The offset producer was completed in the chalk at 1,895 feet. Robertson Drilling Co.'s No. 1 Hughes, Section 36-8-12, Zwolle district, tested dry at 2,585 feet and again at 2,594 feet and is waiting orders. Service Drilling & Royalties Co.'s No. 3 E. B. Smith, SW SW Section 7-7-10, used acid at 2,796 feet and is arranging to pump with 1,500 feet of oil in the hole.

W. O. Blackman, trustee's No. 1 Pardee Co., SW NW Section 36-22-10, Webster Parish, 6 miles northeast of Cotton Valley and 3 miles southwest of the old Gleason craters that led to the discovery of Cotton Valley and the north Webster gas area, is the cause of a flurry. With 6⅝-inch cemented at 2,610 feet they are building steel storage and buying additional stuff while waiting to drill plug about May 16. Others also are buying all available acreage, royalties and minerals. R. E. L. Silvey's No. 1 Drake, Section 14-19-10, a wildcat south of Cotton Valley, topped the red beds at 3,622 feet and was in red shale at 3,712 feet.

ARKANSAS

Miller County's fourth commercial well, Duluth-Arkansas Oil Co.'s No. 1 Beck, NW SW Section 34-15-26, a mile northeast of the other three, was completed May 4 as a 150-bbl. pumper from 11 feet of sand at 2,785-96 feet after plugging back from 3,100 feet, and is shut in for tankage. Jenkins Brothers' No. 1 B. F. Smith, SE SE Section 32-15-26, a mile west of the first three producers, got salt water sand at 4,519 feet and was abandoned. Fitzwater and others' No. 1 Norsen, SE SW Section 20-15-27, several miles southwest of the center of development, was drilling shale at 2,715 feet.

In Lafayette County McDonald & Carroll's No. 1 Robert Adams, SE SW Section 2-19-26, was dry and abandoned in sandy shale at 3,367 feet. Tom Nash abandoned No. 1 Union Sawmill, NW NE Section 19-18-11, dry at 3,392 feet. C. W. Alworth and others have derrick up for No. 1 W. D. King, SE SW Section 16-17-20, which is to be a 2,500-foot test on a 4,000-acre block. R. E. Collins and others have begun drilling for No. 1 Craig, NE SE Section 15-10-29, Sevier County, set 12½-inch at 30 feet and are drilling ahead. They have a block of 13,000 acres around the location. B. F. Thompson's No. 1 Rosser, SE SE Section 7-5n-2w, Woodruff County, in eastern Arkansas, topped the Nacatoch at 1,700 feet and had a small gas show with salt water at 1,727 feet. It will probably be abandoned and a new hole drilled offsetting it.

MISSISSIPPI

J. A. Baker and others' No. 3 Rankinside, NE NW Section 6-5-2e, Rankin County side of the Jackson gas field, was completed at 2,362 feet as a gasser gauging 48,132,000 feet. Westbrook-Thompson Holding Co.'s No. 1 Knowlton, Section 3-25-7, Bolivar County, was dry and abandoned at 3,650 feet. Cleve Love and others have derrick up for No. 1 Childress, NE NE Section 24-5-1e, Rankin County side of the Jackson gas field, and Lamar Oil Co. has rig up to drill No. 1 Scott, NE NE Section 18-2n-14, Lamar County.

United Gas Public Service Co.'s No. 1 Luce Packing Co., Section 25-15-6, George County, is shut down at 2,500 feet while seismograph crews are shooting the block. Ferguson-Fuller and others' No. 1 Montgomery, NW NW Section 26-6-1e, Hinds County side of the Jackson gas field, whipstocked casing at 2,194 feet and was drilling black shale at 2,834 feet. Natural Gas Co. of Mississippi's No. 1 Holder, Section 13-6-1e, Hinds County, is shut down while refinancing to drill to the base of the chalk. In Newton County, Bob Dalton and others' No. 1 Majure, SE SE Section 25-6-11e, topped black shale at 2,240 feet, topped the chalk at 2,740 feet, drilled 10 feet into it and shut down. Foster Creek Oil Co.'s No. 1 Foster Creek Lumber Co., Section 12-2n-2w, Wilkinson County, in the Conroe-Jackson trend, is dry and shut down at contract depth of 3,000 feet.

EAST TEXAS—ALABAMA

Four completions in East Texas (border counties) were all old wells that had been inactive for several months and dropped from the list. They were Tarkington & Jones' (Langford and others) No. 1 Whybark, J. H. Dyer Survey, Bowie County, total depth 2,248 feet; Davis & Pigg's (Joiner Petroleum Corp.) No. 1 Roy Bryan, Latimer Survey, Cass County, and C. E. Murdock's No. 1 First National Bank, Evans Watson Survey, Cass County, total depth 4,390 feet; J. L. Nelson and others' No. 1 J. W. Williams, James Hooks Survey, Panola County, total depth 2,890 feet.

Dragon Oil Co.'s No. 1 R. W. Player, M. G. Noll Survey, Marion County, 2 miles west of the Trees City district of the old Caddo Field in Louisiana, is arranging to pump with 800 feet of 48 gravity oil in the hole from 2,428 feet. Starling & Preston's No. 1 Henderson, R. Bennington Survey, short distance

(Continued on Page 88)

Wildcat Operations in Louisiana-Arkansas

(Rotary operations unless otherwise designated)

North Louisiana

BOSSIER PARISH

Company, well, farm name, section and block—	Remarks:
Cryer Oil Co.'s No. 1 fee, 2,400 ft. N, 1,080 ft. E, SW cor. Sec. 25-19-12	Cmtd. 6-in. csg. 852 ft; drilled plug; W.O.
A. W. Phillips, tr.'s No. 1 Oden, 300 ft. W, 150 ft. N, SE cor. NW NW Sec. 4-18-13	Set 6-in. with packer 1,607 ft.; bailed dry 1,714 ft; W.O.
B. A. Sherrell, tr.'s No. 1 fee, NE NW NW Sec. 18-19-11	Derrick pattern.

CADDO PARISH

Nelson Oil Corp.'s No. 1 Taylor, 200 ft. N, 300 ft. E, SW cor. Sec. 13-18-14	Began drlg May 6; 10-in. 50 ft; drlg. 100 ft.

CLAIBORNE PARISH

United Gas Public Service Co.'s No. 1 Meadows, approximately 100 ft. S, center E½ E½ Sec. 13-21-5	Coring red shale 5,392 ft.
United Gas Public Service Co.'s No. 1 Temple, 1,340 ft. W, 660 ft. N, SE cor. Sec. 21-23-7	Coring 4,341 ft.

DE SOTO PARISH

Bailey Gantz et al's No. 1 Jenkins, NW cor. SE SW Sec. 35-13-12	Drlg. shale 2,595 ft.

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Resumption of Drilling Operations at Tomball's Wildcats Follows Humble-Magnolia Trade

By NEIL WILLIAMS
Staff Correspondent, Gulf Coast Fields

HOUSTON, Tex., May 15.—Closing of a trade by the Humble Oil & Refining Co. for an undivided half interest in Magnolia Petroleum Co.'s 10,000-acre block at Tomball, northern Harris County, has been followed by the resumption in drilling in the latter company's twin wildcats on the block, and, barring further unexpected delays the coming week should go a long ways toward answering one of the most asked questions: "Is Tomball an oil field or are these tests just so many more dry holes?"

These two tests, located approximately 3 miles apart, have been drilling almost neck and neck. Late in the week, Magnolia's No. 1 Martens, the north test in the Joseph House Survey, was drilling in shale below 5,300 feet, while the south test, No. 1 Kobs, in the lower J. M. Hooper Survey, was in shale around 5,200 feet. Both have been shut down for about two weeks pending completion of the trade between Humble and Magnolia.

In this trade Humble acquires an undivided half interest in the Magnolia block for $100 an acre, this being paid half in cash and half in oil. Magnolia crews are being retained in completing the two tests started but it is reported that further development will be carried on by Humble on a joint basis. The latter company has just completed reworking the area with geophysical instruments. In addition to the half interest now held in this block, Humble owns approximately 9,000 acres in another block adjoining the Magnolia block to the south. It also holds the top leases to the Magnolia block.

The transaction is looked upon here as being one of the most significant deals made on the Gulf Coast in years in view of the intense lease and royalty play which has taken place at Tomball and the attention directed at the area generally. Humble last week completed negotiations for the purchase of the entire lease holdings at Tomball of the Standard Oil Co. of Kansas, these comprising approximately 1,100 acres, paying $300,000 cash and an overriding twenty-fourth royalty.

Tests Watched Closely

The two Magnolia wildcats are expected to pick up the Cockfield, the horizon in which production, if any, is to be found, within the next 200 to 250 feet. Both wells have been running above normal, based on tops of the Hockleyensis marker, but so far neither has encountered the slightest show and lately there has been much uncertainty concerning the outlook. Although these tests naturally will not condemn the entire area, much is at stake in their outcome for hundreds of thousands of dollars have changed hands during the past six months in the most intense lease play ever experienced on the coast. The whole area has been played generally as proven territory and if these two tests are failures there will be many headaches.

There were many developments of importance in the Gulf Coast the past week, including the finding of salt at Esperson, Liberty County, a 3,000-foot extension of the Hankamer Field, also Liberty County, and the starting up of additional wildcatting in scattered new areas.

At Esperson, Cranfill-Reynolds Co.'s No. 10 Moores Bluff, located in the M. Duncan Survey, on the southwest side of the field, drilled into a broken salt and sand at 7,238 feet and late in the week was coring deeper at 7,323 feet. This is the first salt ever encountered at Esperson, a geophysically discovered field. The area was worked with the torsion balance by the Union Exploration Co. in 1928 and since then approximately 50 tests have been drilled, of which nearly 40 have been producers. The field now has a daily production of between 1,300 and 1,400 bbls., producing commercially from three sands, one at 2,200 feet, another at 3,200 feet and a third at 4,100 feet. Numerous other sands showing oil and gas have been encountered to as deep at 7,624 feet.

Third Deepest Test in Area

The dome has been looked upon as being exceptionally deeply seated. The present test is the third deepest test drilled in the area, one other going to a total depth of 7,877 feet and another to 7,386 feet, where they were abandoned without finding salt. They were located some distance to the north of the salt test in the heart of the field. The present test tried to make a well in a sand at 7,077 feet and flowed 1,000 bbls. in 24 hours but sanded up. After repeated unsuccessful efforts to get the well back in, the hole was deepened.

Esperson is the fortieth geophysically discovered area or field on the Gulf Coast in which salt has been found, thus proving the work of the instruments. Production was opened in 1929. Virtually all the acreage now is owned or controlled by Cranfill-Reynolds Co.

Gulf Production Co.'s No. 1 Crowe & Jacobs, H.&T.C. Survey, Section 21, approximately 3,000 feet east of production of the Hankamer Field in the extreme southern part of Liberty County, was completed the past week flowing 265 bbls. of fluid, 30 per cent basic sediment and wash water, through a three-eighths inch choke. It is in sand at a total depth of 4,921 feet with 32 feet of 4½-inch screen in the hole. Pressure on the tubing gauged 1,180 pounds and gravity of the oil is 26.1 degrees at a temperature of 80 degrees.

At latest report the well was flowing at the rate of 200 bbls. of fluid, 40 per cent basic sediment and water, and operators were undecided as to whether to deepen the well in exploration of lower sands. Yount Lee Oil Co.'s No. 1 E. W. Boyt, 3 miles farther east in Section 17 of the same survey, is drilling shale and lime below 6,450 feet. The latter is on what is believed to be a separate prospect, known as Gum Island, on which that company drilled a wildcat to a total depth of 9,334 feet. This was a mile south on the Chambers County side of the line.

East Stratton Ridge

Amerada Petroleum Corp. and Rycade Oil Corp.'s No. 3 Seaburn, located on what is known as the East Stratton Ridge prospect, east of the old Stratton Ridge Dome, Brazoria County, flowed a little oil and wash water by heads from a sand and lime formation at 4,405-4,500 feet but has been killed to run tubing. A total of 90 feet of 9⅝-inch screen was set in this hole on a full string of 9⅝-inch casing. The oil was 29.2 gravity (corrected for temperature). The well is a little less than a mile distant from the small, shallow production once developed on the old dome. It has not been determined whether East Stratton Ridge is a separate dome or a secondary high on the same salt mass as Old Stratton Ridge. Salt has been encountered in both areas but a deep test drilled between them failed to find the dome.

Livingston Field

Negotiations for the purchase by Shell Petroleum Corp. for the holdings of Dick Schwab in the new Livingston Field, discovered by the latter operator, apparently have fallen through. The proposed deal involved a total of approximately 800 acres with the discovery well, a wet gasser. Dick Schwab now is proceeding with development of his acreage and is rigging up for his No. 1 Craig, a north offset to Shell Petroleum Corp.'s No. 1 Davis & Holmes, which is standing shut in pending completion of a 6-inch line from the field by Shell Pipe Line Co. The latter line will tie into the company's main East Texas-Gulf Coast trunk line at the Goodrich pump station.

Interest at Livingston now is centered on Englewright and associates' No. 1 Kingsbury, nearly a mile northeastward from the Schwab discovery well, which late in the week was drilling in shale below 4,100 feet and which soon should pick up the pay horizon found by the other wells around 4,300 feet. As the Shell producer mentioned is approximately three-quarters of a mile southeast of the Schwab gasser, the Englewright well is a key test in the northeastward direction.

Polk County Wildcat

Another addition to the wildcats being drilled in Polk County is Kirby Petroleum Co.'s No. 1 Kirby Lumber Co. fee, located 466 feet out of the northwest corner of the James Stephenson Survey. This wildcat is approximately 15 miles southeast of the Livingston Field, but in view of the interest which is being centered on present and expected development along the "Conroe trend," it will be watched pretty closely. Boone, Clark & Boone's No. 1 Texas Long Leaf, D. B. McComb Survey, southeast of Leggett, and another important Polk County wildcat, late in the week was drilling in sandy shale below 3,155 feet. Carl B. King Drilling Co.'s No. 1 Alabama Indian Reservation, Thomas Colville Survey, 15 miles northeast of the Livingston Field, has cemented 10¾-inch surface casing at 400 feet.

Harris County

Sinclair Prairie Oil Co. is rigging up for the first deep test on its 6,000-acre block recently taken in the northwestern part of Harris County and about 10 miles west of the Tomball area. This test, in the Kirmayer 800-acre tract, is in the Jesse Denton Survey. Between this area and the Hockley Dome and westward into Waller County there recently has been an active leasing and royalty play.

Jackson County

Another interesting wildcat will be that which Turnbull and associates have spudded in at Ganado, eastern Jackson County, and a short distance across the Wharton County line. This is on a geophysical block leased several years ago by Shell Petroleum Corp., Gulf Production Co. and Humble Oil & Refining Co. The test will be on the Mauritz tract in the John Davis Survey at the edge of the town of Ganado.

Brazoria County

Danciger Oil & Refining Co. and Hamill Drilling Co. cored sand showing oil and gas at 6,752-62 feet in their No. 2 Hunt, W. Carson Survey, at Pledger in northwestern Brazoria County, and now are reaming to run casing. This well is 1,050 feet south and 185 feet west of No. 1 Hunt, discovery well, completed last November as a high pressure wet gasser in sand at 6,758-82 feet. Humble Oil & Refining Co.'s No. 2 Pierce Estate, at Pledger, but located across the line in Matagorda County, is drilling shale below 5,430 feet.

Jennings Field

S. Rhodes' No. 107 Latrielle, an old shallow well drilled by The Texas Company at Jennings, La., has been worked over and deepened to 1,845 feet, where it has been completed flowing 900 bbls. daily. It is in the center of the old field.

Gulf Coast Fields and Wildcats

Week Ending May 13

RACCOON BEND—AUSTIN COUNTY

Company, farm and location—	Remarks
Humble O. & R. Co.'s No. 5 Ollie Wilson, Wm. Harvey Sur., 2,491 ft. from NW line, 407 ft. from NE line	Set screen 3,394 ft.

DAMON MOUND—BRAZORIA COUNTY

Sinclair Prairie Oil Co.'s No. 31-A Bryan, 155 ft. N, 45 deg. E of SW cor. of Blk. 28, Masterson Subd., and 140 ft. S, 45 deg. E, A. Darst Sur.	T.D. 7,586 ft; no report.

MANVEL—BRAZORIA COUNTY

Alpha Oil Co.'s No. 1 Patterson, H. N. Little Sur., 150 ft. out of S cor. of 10-ac. tract (Lot 40)	Drlg. shale and lime 2,545 ft.
The Texas Co.'s No. 1-B Belcher, H. N. Little Sur., 300 ft. out of N cor. of "B" lease	Gumbo 1,188 ft; cmtd. 10¾-in. csg. on bottom.
The Texas Co.'s No. 1 Davis, 250 ft. S 42 deg. W and 400 ft. N 48 deg. W out of E cor. of Lot 31, H. N. Little Sur.	Sand 3,355-71 ft; cmtd. 9⅝-in. csg. 3,355 ft.

BARBERS HILL—CHAMBERS COUNTY

Sinclair Prairie Oil Co.'s No. 11 Wilburn (D.D.), Wm. Hodges Sur.	Sand 5,155-83 ft; set 28 ft. 10 in. of 5-in. screen; comp. 745 bbls.; ½-in. choke.
Sun Oil Co.'s No. 16 Wilburn, Henry Griffith League, 150 ft. W of No. 14 and 50 ft. N of S line	Coring hard sandy shale 3,055 ft.
The Texas Co.'s No. 3 Lawrence fee, Henry Griffith League, 740 ft. W of E line in center of tract	T.D. 5,278 ft; sidetracked 1,400 ft.; drlg. salt 1,506 ft.
Yount Lee Oil Co.'s No. 20 Chambers County, Wm. Bloodgood Sur., 150 ft. N of No. 2 and 50 ft. E of W line	T.D. 6,824 ft; plugged to 5,502 ft. and cut out 5-in. liner at 4,727 ft; set 44½ ft. of screen 4,782 ft; rigging up to pump.

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Production Test Virtually Assures Lillis-Welsh Will Be World's Deepest Commercial Well

By L. P. STOCKMAN
Staff Correspondent, California Fields

LOS ANGELES, Calif., May 15.—Other developments in California during the past week were overshadowed by completion of Dana Hogan's No. 1 Wharton, a wildcat in the Weed Patch area of Kern County, and the preliminary production test conducted by the North Kettleman Oil & Gas Co. in No. 1 Lillis-Welsh, an outpost located in the extreme western end of the North Kettleman structure.

In addition to proving up the Eocene as highly productive in the Kettleman North Dome Field, No. 1 Lillis-Welsh will, upon completion a few weeks hence, become the world's deepest producing well. This well blew in a few days ago while the crew was bailing at approximately 5,000 feet in order to make definitely certain that the last cement job was effective, as this precautionary measure was deemed advisable in order to be absolutely sure that there were no mechanical defects before drilling ahead into the Eocene. The well was shut in within a short time and consequently no accurate figures are available as to what it made before the gates were closed. It is regarded as certain, however, that Ed McAdams has the makings of an excellent producer as the well has a computed rock pressure of 6,000 pounds and showed enough oil from approximately 12 feet of formation to assure commercial production almost definitely without any further work. It is the present intention to drill ahead another hundred feet or so before officially completing the hole.

Completion of No. 1 Lillis-Welsh—and those who know Ed McAdams are hoping it will show an extremely large initial—will be a fitting climax to aggressive and persistent exploration work. It likewise will be a tribute to the indomitable will of Mr. McAdams in the face of adverse criticism. Of the group who advanced dry hole money down into the Temblor, only the Union Oil Co. continued its support. When the crisis was reached the Union loaned Ed McAdams sufficient 3½-inch National Tube seamless drill pipe to prosecute further work.

Credit Accorded McAdams and Welsh

In addition to the commendation due Mr. McAdams and the splendid work performed by the crews, H. H. Welsh of Fresno, Calif., is accorded credit for his unshaken belief that Kettleman Hills eventually woud be found productive. Mr. Welsh and the late H. C. Lillis purchased several hundred acres in fee over 15 years ago when Kettleman Hills was inhabited by coyotes and jack rabbits. The status of No. 1 Lilils-Welsh is especially significant because in addition to adding several hundred acres of proved oil land it definitely proves up the Eocene in the Kettleman North Dome Field as highly productive and substantially increases California's crude oil reserve. This discovery likewise indicates the probability that Eocene production will also ultimately be discovered in the Kettleman Middle Dome Field and result in a further increase in future recoverable production of the State.

Dana Hogan's No. 1 Wharton, in the Weed Patch, or Mountain View Field, of Kern County, was swabbed in May 13 flowing 65 bbls. per hour or at the rate of approximately 1,500 bbls. per day, from 5,864 feet. The oil tests approximately 30 degrees and the well is flowing under a pressure of 400 pounds on the tubing and 600 pounds on the casing.

Hogan's completion definitely proves up the Mountain View Field pioneered by the Shell Oil Co. about three years ago. The Shell's discovery well, No. 1 Porter Day, was never officially completed as the company carried the well down as a deep conclusive test and subsequently plugged back with only mediocre success. The Shell controls most of the potentially productive acreage in this area, and although Hogan's new well has been shut in because of the lack of pipe line facilities, will be obliged to undertake additional development work on several leases within 90 days.

Equipment Important Factor

In the drilling of No. 1 Lillis-Welsh drill pipe and bits have been important factors, particularly in drilling through the Kreyenhagen, where the hard flinty formation was especially tough. In drilling down to 6,710 feet, North Kettleman Oil & Gas Co. used 6⅝-inch 25.20-pound National seamless grade D drill pipe and from this depth to 9,638 feet the company used 4½-inch 19.60-pound Jones & Laughlin grade D drill pipe. From 9,638 feet to 10,927 feet the company is using 3½-inch o.d. 13.30-pound National Tube Co. grade D seamless drill pipe. It is significant to note that the string of 3½-inch drill pipe was loaned to Mr. McAdams by the Union Oil Co. after having seen previous service in drilling operations of the latter.

In addition to standard fishtail bits, the North Kettleman Oil & Gas Co. used Hughes three-cone roller bits, Reed roller bits and Zublin bits of varying dimensions. It is obvious the bits used in this deep well took plenty of punishment in drilling through both the Temblor and the Kreyenhagen, as several times during the course of work 12 inches of new hole represented a good day's work. The North Kettleman Oil & Gas Co. will probably establish another casing record. The importance of this possible record depends upon whether the company finishes the hole with a liner or a full oil string. The company has already chalked up one casing record by landing and cementing 9,642 feet of 7-inch grade D Jones & Laughlin casing, this string consisting of 6,142 feet of 30.30-pound, and 3,500 feet of 36-pound pipe. Above the 7-inch the company landed 6,710 feet of 11¾-inch 61-pound grade D Jones & Laughlin casing, and above this 1,275 feet of 18⅝-inch 84.50-pound National Tube Co. seamless slip joint casing.

Unit Operation

The committee charged with the task of formulating a unit plan of operation, or some other acceptable method of developing the Kettleman Middle Dome Field, has been holding a series of meetings during the past 15 days. Another meeting was held early in the week but nothing of a tangible nature has developed. Considerable progress has been made in ironing out many objections and, as the situation looks at present, George W. Holland, representing Secretary of the Interior Ickes, will probably return to Washington in the very near future. Due to the relatively limited number of operators involved, preliminary plans have progressed satisfactorily and an early decision is anticipated. As was the case in the Kettleman North Dome Field, there is a considerable difference of opinion with respect to the amount of potential oil land in the Middle Dome. Engineers are of the opinion that the amount of potentially productive acreage in the Kettleman Middle Dome Field is substantially lower than originally believed.

Coal Oil Point

There is a strong possibility that another new oil field will be opened in California within a few weeks and if such an event occurs it will form a fitting climax to an extended period of exploration. The discovery would fulfill the prediction of the late Irving V. Augur and his associate, J. E. Eaton, that the Coal Oil Point area of Santa Barbara County offered exceptional promise from a production standpoint. This will not detract, however, from the present operators if they succeed in developing production where two other operators have failed. The area, which has all the earmarks of becoming California's next oil field, is at Coal Oil Point, a few miles east of the prolific Elwood Field of Santa Barbara County. If geological deductions are correct, and considerable time and effort has been spent in rechecking and correlating data for several years, the Coal Oil Point structure has complete closure. There is a slight difference of opinion with respect to closure on the east end, but this factor is more or less of a personal interpretation of geologic evidence.

The lack of unanimity with respect to the potentialities of the Coal Oil Point structure can be attributed to the fact that the entire structure is submerged below the waters of the Pacific Ocean. To determine the dips and trend of the structure, geologists and divers were obliged to wash away the sand deposit with compressed air and subsequently record their findings in a rowboat at the surface. A tugboat carried the compressor and by remaining relatively stationary permitted engineers to compile necessary data. The first well undertaken in the Coal Oil Point area was started by the Bolsa Chica Oil Co. on tideland permit No. 191. This well cored oil sand at approximately 4,000 feet, but the upper part of the hole was lost because of inefficient drilling. After several months of unsuccessful effort, the Bolsa Chica concluded negotiations with Superior Oil Co. whereby the latter assumed work. The Superior was unsuccessful in overcoming the mechanical trouble which existed in the Vaqueros and after deepening the hole to the underlying Sespe, pulled out of the venture. Several months later J. J. (Jack) Doyle, California independent operator, became interested in the possibilities of the Coal Oil Point area and completed arrangements to develop not only tideland permit No. 191 but all other tideland permits and properties held by the Bolsa Chica. Doyle topped the Vaqueros at 4,058 feet where 5 feet of Vaqueros shell was logged. Beneath the shell, the hole being cored solid, the formation changed to a hard oil sand with a little shale and then to a more favorable oil sand. Drilling operations have been concluded at 4,080 feet preparatory to landing and cementing a string of 9⅝-inch casing at approximately 4,060 feet. The last 4 feet of core consisted of a soft, porous and exceptionally well saturated oil sand. The thickness of the oil sand will remain a matter of conjecture until drilling operations are resumed following the landing of a string of 9⅝-inch, but at the same time the outlook is considered exceptionally promising, particularly in view of the gas pressure encountered. Superintendent Howard Murchie, who has been affiliated with the Doyle interests for several years, is drilling the hole with extreme care and is being assisted by Vernon King, chief geologist of the Doyle interests. Doyle's well on tideland permit No. 191, which is generally referred to as Bolsa Chica Oil Co.'s No. 2, is 400 feet north of No. 1 and on the east side of the drilling pier. In other words, the present well is between the shore line and Bolsa Chica's initial test.

It is located on what a number of geologists declare to be an exceptionally promising structure, and if production is

TANKER SHIPMENTS FROM LOS ANGELES TO DOMESTIC AND FOREIGN PORTS

	April 29		April 22			
Intercoastal-domestic—	Total this week	Daily average	Total last week	Daily average	This year to date	Same time last year
Crude oil	.....	.....	.....	.....	78,085	.....
Fuel oil	148,721	21,246	.....	.....	591,444	.....
Diesel and gas oil	.....	.....	.....	.....	1,014,084	116,890
Gasoline	116,930	16,704	74,065	10,581	2,516,498	2,183,348
Kerosene	.....	.....	.....	.....	411,076	80,745
Foreign exports—						
Crude oil	56,979	8,140	237,241	30,080	2,356,667	3,010,232
Fuel oil	231,681	33,097	139,862	19,837	2,480,407	3,472,338
Diesel and gas oil	61,519	8,788	16,376	2,391	1,046,294	761,735
Gasoline	145,026	20,718	333,616	47,659	2,068,234	3,042,750
Kerosene	25,236	3,605	.....	.....	682,289	724,071
Naphtha distillates	.....	.....	.....	.....	.....	41,175
Coastwise-domestic—						
Crude oil	.....	.....	.....	.....	3,856,090	4,865,109
Fuel oil	94,895	13,556	178,070	25,490	3,430,947	4,928,038
Diesel and gas oil	27,295	3,899	58,205	8,315	515,655	519,362
Gasoline	374,289	53,470	263,607	37,658	4,144,561	4,991,093
Kerosene	14,061	2,009	.....	.....	81,184	57,007
Naphtha distillates	.....	.....	.....	.....	27,651	.....

TANKER SHIPMENTS FROM SAN FRANCISCO TO DOMESTIC AND FOREIGN PORTS

Intercoastal-domestic—						
Diesel and gas oil	.....	.....	.....	.....	280,531	70,995
Gasoline	39,210	5,601	.....	.....	278,226	293,455
Kerosene	.....	.....	.....	.....	406,405	.....
Lubricants	8,150	1,164	.....	.....	16,400	15,824
Foreign exports—						
Crude oil	.....	.....	.....	.....	629,722	578,306
Fuel oil	.....	.....	.....	.....	252,511	521,659
Diesel and gas oil	2,498	357	.....	.....	414,679	352,107
Gasoline	92,225	13,175	170,408	24,349	1,655,238	1,410,916
Kerosene	15,115	2,159	14,525	2,075	347,883	340,042
Lubricants	1,075	154	.....	.....	14,147	20,884
Coastwise-domestic—						
Fuel oil	74,871	10,696	72,803	10,400	932,927	864,052
Diesel and gas oil	.....	.....	.....	.....	153,041	187,104
Gasoline	48,145	6,878	30,079	4,297	1,184,106	1,152,787
Kerosene	.....	.....	2,680	383	57,531	36,278

not secured it will be one of the few closed structures in California which has failed to show an accumulation of oil.

Huntington Beach

Macroo Oil Co. focused the attention of operators on the Seventeenth Street town lot area of the Huntington Beach Field early in the week by completing No. 1 Smith, flowing 2,510 bbls. of exceptionally clean 24.9 gravity oil and 1,740,000 feet of gas per day. This well was bottomed at 4,450 feet and finished with a 6⅝-inch liner carrying 622 feet of perforated and 4,425 feet of 2½-inch tubing. Macroo Oil Co.'s new well is the largest completion in the Huntington Beach Field in a long time and will undoubtedly lead to additional development.

Kettleman Hills

The Kettleman North Dome Association completed another well in the Kettleman North Dome Field when No. 87-30 J was brought in flowing 5,000 bbls. of clean 34.9 gravity oil per day from 8,919 feet, the hole having been finished with a 6⅝-inch combination string landed at 8,918 feet and cemented through perforations at 7,910 feet. After completing No. 3 Amerada King approximately two weeks ago, Union Oil Co. killed No. 2 King to remedy a mechanical condition. Upon re-entering the hole the company found the 6⅝-inch casing partly collapsed at approximately the 7,100-foot level. Repair work is now under way and the well should be back on production within two weeks. The Standard is expected to finish a new well in the Kettleman North Dome Field in the near future and this will be followed into completion by several others within a few months. The Superior Oil Co. is making a deep test out of No. 6 Huffman, a drilling well in the western part of the field, and with this project already below the 9,000-foot level operators will no doubt watch the outcome of work with considerable interest.

Mountain View

The potentiality of the Mountain View Field of Kern County is expected to be partially determined within 10 days as a result of projected production tests to be conducted on Dana Hogan's No. 1 Wharton and the Mohawk Petroleum Co.'s No. 1 Hood. Both tests have shown evidence of resulting in production, although it is a little too early to form a definite opinion. Dana Hogan, testing out the Santa Margarita, has the largest thickness of oil sand and is expected to finish a commercial producer within a day or so. No. 1 Hood of the Mohawk Petroleum Co. blew out early in the week and ran unrestrained for approximately eight hours, during which it produced at the rate of approximately 3,000,000 feet of wet gas per day. The crew did not anticipate such an occurrence and thus permitted the drilling fluid to thin out. Developments in the Weed Patch area during the next 15 days should bear watching because one of these wells may definitely prove the existence of commercial production. Shell's pioneer well, No. 1 Porter Day, showed enough on a preliminary production test during the latter part of 1930 to indicate the existence of a new field, but subsequent work has been somewhat unsatisfactory.

The A. T. Jergins Trust has abandoned No. 1 Nission, a wildcat in the Sivert area, a few miles southeast of the Edison district of Kern County, as a duster at 2,767 feet. In the Midway-Sunset Field of Kern County, Standard Oil Co. has plugged back No. 1 Mascot from 9,752 feet to 4,460 feet and has perforated the 9-inch casing at 4,285-4,455 feet. This deep well is being tested on the way out and will probably be an early abandonment as the outlook is not any too promising. Hub Petroleum Corp. is still working on No. 1 Purman, a deep test in the Gould Hills of Kern County, but is experiencing considerable difficulty with water.

Rincon

Indian Petroleum Corp. is completing preparations to conduct a production test on No. 1, on the Shudde tideland permit No. 82 in the Rincon Field of Ventura County at 3,455 feet and, with approximately 90 feet of oil sand logged in the present horizon, the outlook appears favorable for production. The company will probably resume deepening operations, however, unless the initial production is in excess of 500 bbls. per day. In the San Miguelito Field of Ventura County, Honolulu Consolidated is expected to log the top of the deep Grubb zone within 10 days as the company has a little less than 500 feet of hole to make. The Continental is nearing the 5,000-foot level in No. 2 Grubb, but will probably not pick up the Grubb horizon within another month or so.

General Petroleum is reaming No. 15-A Barnard, a projected deep test in the Ventura Avenue Field, and tentative plans call for the landing of approximately 7,000 feet of 9-inch casing some time during the course of the next few days. Bankline Oil Co. has made exceptionally fast progress during the past 10 days and spudded in No. 10 on tideland permit No. 89. This well is on a specially constructed pier approximately 900 feet off shore and will, in conformity with the gentlemen's agreement between Elwood operators, be completed in the present productive Vaqueros. Caroline Spalding is building rig for No. 7 to be drilled on the Blue Goose tideland permit No. 93 in the Elwood Field, but it will be another 10 days before the bit begins making hole. Standard Oil Co. is also starting a new well in Santa Barbara County and should begin drilling in No. 1 Goleta within 15 days.

Long Beach

Three wells were put on production in the Long Beach Field of Los Angeles Basin during the week, although none registered substantial production. The Texas Company recompleted No. 4 on Foster lease No. 1, pumping 220 bbls. of relatively clean 28.8 gravity oil per day after plugging back the hole from 6,344 feet to 5,830 feet. No. 11 of the Woods Callahan Oil Co., another recompletion, was returned to production pumping 388 bbls. of 25.1 gravity oil daily after the hole had been redrilled to 5,176 feet and recompleted with a 4¾-inch liner carrying 219 feet of perforated. The bottom of this hole is at 5,849 feet, but the company was unable to clean out below 5,176 feet. Allied Petroleum Corp. recompleted No. 2 Garrison at 4,981 feet after finishing the hole with a 4¾-inch liner, including 539 feet of perforated, and brought the well back on the pump doing 168 bbls. of relatively clean 28.9 gravity oil per day. The Van Cleave Oil Co. has staked location for two new wells in the Long Beach Field and drilling operations on the first are expected to get under way within 15 days. Atascadero Oil Co. has also staked location for a new well to be drilled in the Long Beach Field, but this project, on the Willett property near Willow and Raymond Streets, will probably not get under way for three weeks.

La.-Ark. Fields

(Continued from Page 85)

north of Jefferson, Marion County, is drilling 6⅝-inch plug at 2,577 feet.

In Baldwin County, Alabama, H. H. Givens' No. 1 Ashman, Section 10-6-5, is shut down for orders at 1,393 feet. Escambia Oil Co. is drilling No. 1 State Line Lumber Co., NE NW Section 24-1n-10, at 300 feet. South Alabama Oil & Gas Co. is fishing for drill stem in No. 1 Wilson, Section 26-7-1w, Washington County, total depth 3,480 feet.

A decline of 1,135 bbls. in daily average runs from the field does not necessarily reflect wells taken off production on account of the low price of oil and abandonment of the gravity schedule in North Louisiana and Arkansas. There was expectation that there would be many such, but, while no survey of the territory to determine how many, it is evident that few have been dropped. Only five such, all in Zwolle, have actually been accounted for and their total production was only 100 bbls. Differences as great as that between this week's total of 57,380 bbls. and last week's 58,515 bbls. have occurred before during normal conditions. Louisiana pools declined 955 bbls., from 28,390 bbls. to 27,435 bbls., and Arkansas runs declined 180 bbls. from 30,125 bbls. to 29,945 bbls. Runs from the several pools were:

North Louisiana	
Caddo, light	4,970
Caddo, heavy	1,580
Cotton Valley	490
De Soto-Red River	1,700
Elm Grove	830
Haynesville	3,935
Holly	210
Homer	2,685
Pleasant Hill	250
Sarepta-Carterville	800
Urania	1,400
Zwolle	9,085
Total	27,435
Last week	28,390
Decrease	955

Arkansas	
Champagnolle	1,340
El Dorado	2,590
Lisbon	400
Miller County	100
Nevada County	400
Smackover, light	2,555
Smackover, heavy	21,975
Stephens	150
Urbana	435
Total	29,945
Last week	30,125
Decrease	180
Both States	57,380
Last week	58,515
Decrease	1,135

IMPORTANT SOUTHERN CALIFORNIA WILDCATS

Company, well and location—	S.T.R.	Depth	Status
Palm Ridge Oil Co., No. 1 Palms, Los Angeles Co.	2- 2-15	4,907	sd. sh. drilling
Baldwin Oil Co., No. 9 Inglewood, Los Angeles Co.	7- 2-14	5,863	suspended
Kupfer, A. M., No. 1 Inglewood, Los Angeles Co.	17- 2-14	5,853	suspended
Pacific Gulf, No. 1 Athens, Los Angeles Co.	19- 2-13	6,094	suspended
Pacific Oil Inv. Co., No. 1 Wilmington, Los Angeles Co.	28- 4-13	3,717	reaming
Wilmington Oil Co., No. 1 Wilmington, Los Angeles Co.	28- 4-13	3,646	pumping test
Peoples Oil & Gas Co., No. 1 Compton, Los Angeles Co.	31- 3-12	rig	rigged up
Oakes & Mead, No. 1 Lyndwood, Los Angeles Co.	31- 2-13	4,940	cleaning out
Community Oil Co., No. 1 Montebello, Los Angeles Co.	34- 1-11	5,200	redrilling
Universal Consd., No. 1 Montebello, Los Angeles Co.	5- 2-11	5,117	gr. sd. drilling
Andrus & Hutcheson, No. 1 El Monte, Los Angeles Co.	11- 1-11	2,197	reaming
Willetts Pet., No. 1 Saugus, Los Angeles Co.	35- 5-16	2,074	cemented
Smith, J. A., No. 1 Saugus, Los Angeles Co.	32- 5-17	3,515	suspended
Alpha Oil Co., No. 1 Calabasas, Los Angeles Co.	22- 1-18	969	suspended
Hudson Pet., No. 1 Newhall, Los Angeles Co.	1- 3-16	1,446	O. S. drilling
Ball, W. T., No. 1 Newhall, Los Angeles Co.	34- 3-16	3,552	suspended
Big Four Oil Co., No. 1 Newhall, Los Angeles Co.	32- 4-16	2,230	suspended
Marble, Willard, No. 1 Van Nuys, Los Angeles Co.	6- 2-16	2,000	cemented
Nuoil Co., No. 1 Newport, Orange Co.	29- 6-10	3,901	suspended
Mineral Exploration, No. 1 Capistrano, Orange Co.	8- 8-7	4,302	plug 2,350 ft.
Aiken & Bailey, No. 1 El Toro, Orange Co.	3- 6-7	rig	suspended
Placentia Dev. Co., No. 1 Placentia, Orange Co.	31- 3-9	rig	rigged up
Spindletop Oil Co., No. 1 Salton Sea, Riverside Co.	25- 7-10	3,590	suspended
Keeley, E. J., No. 1 Corona, Riverside Co.	21- 4-6	704	hd. sd. drilling
Duncan, N. L., No. 1 Sagebrush, Riverside Co.	8- 4-6	1,157	suspended
Great American Pet., No. 1 Chino, San Bernardino Co.	18- 2-8	1,990	hd. sd. drilling
Great American Pet., No. 2 Chino, San Bernardino Co.	18- 2-8	rig	suspended
McCarthy, C. G., No. 1 Chino, San Bernardino Co.	14- 3-6	rig	portable rot.
Mason Oil Co., No. 1 Salton Sea, Imperial Co.	1-17-15	680	suspended
Woods, D. H., No. 1 Salton Sea, Imperial Co.	7-11-16	774	suspended

IMPORTANT NORTHERN CALIFORNIA WILDCATS

Company, well and location—	S.T.R.	Depth	Status
Fairview Oil Co., No. 1-A Purisima, Santa Barbara Co.	18- 7-34	1,594	suspended
Listle, K. L., No. 1 Purisima, Santa Barbara Co.	33- 8-34	....	grade road
Standard Oil Co., No. 1 Goleta, Santa Barbara Co.	20- 4-28	rig	rigged up
Duell, O. S., No. 1 Naples, Santa Barbara Co.	7- 4-29	5,132	suspended
Equity Oil Co., No. 1 Coal Oil Point, Santa Barbara Co.	24- 4-29	3,750	suspended
Bolsa Chica, No. 1 Coal Oil Point, Santa Barbara Co.	tideland	4,089	suspended
Bolsa Chica, No. 2 Coal Oil Point, Santa Barbara Co.	tideland	4,080	oil sand
Cuyama Oil Co., No. 1 Cuyama, Santa Barbara Co.	12-10-27	2,387	suspended
Woodrow Pet., No. 1 Rincon, Ventura Co.	4- 3-24	7,340	hd. sh. drilling
Indian Pet., No. 1 Rincon, Ventura Co.	tideland	3,484	prod. test
Commander Oil Co., No. 1 Fillmore, Ventura Co.	13- 4-19	2,400	suspended
Hancock Oil Co., No. 1 Fillmore, Ventura Co.	13- 4-19	1,232	suspended
Honolulu Consolidated, No. 1 Miguelito, Ventura Co.	23- 3-24	6,102	hd. sh. drilling
Continental, No. 2 Miguelito, Ventura Co.	23- 3-24	4,660	sd. sh. drilling
C. C. M. O., No. 3-A Miguelito, Ventura Co.	23- 3-24	2,543	sd. sd. drilling
Midlands Pet., No. 1 Ojai, Ventura Co.	9- 3-23	5,991	prod. test
Macrate, A. N., No. 1 Ojai, Ventura Co.	27- 4-23	2,071	suspended
Wilshire Oil Co., No. 1 Sulphur Mountain, Ventura Co.	20- 4-21	1,863	recemented
Mosher, J. W., No. 1 Santa Paula, Ventura Co.	22- 4-21	1,127	gr. sd. drilling
Hardison & Temple, No. 1 Timber Canyon, Ventura Co.	22- 4-21	248	suspended
Duell, O. S., No. 1 Timber Canyon, Ventura Co.	31- 4-20	316	suspended
Petro Producing Co., No. 1 Timber Canyon, Ventura Co.	18- 4-20	4,040	hd. sd. drilling
Las Posas Pet., No. 1 Las Posas, Ventura Co.	22- 3-20	3,979	suspended
Wilshire Oil Co., No. 1 Bardsdale, Ventura Co.	12- 3-20	1,732	suspended
International Oil Developers, No. 1 Conejo, Ventura Co.	33- 2-20	2,770	pumping test
Anderson, C. L., No. 1 Santa Susana, Ventura Co.	36- 3-18	1,053	sd. sh. drilling
Hub Pet. Co., No. 1 Gould Hills, Kern Co.	22-29-21	5,388	testing
Purman, T. H., No. 2 Gould Hills, Kern Co.	27-29-21	335	suspended
General Pet., No. 1 McKittrick, Kern Co.	10-30-21	rig	rigging up
Casa Mera Oil Co., No. 1 Belridge, Kern Co.	29-28-20	2,191	br. sh. drilling
General Pet., No. 1 Belridge, Kern Co.	30-28-21	8,260	suspended
Milham Exploration Co., No. 24 Buttonwillow, Kern Co.	5-28-23	2,625	suspended
Cumberland Oil Co., No. 2 Devils Den, Kern Co.	17-26-18	3,270	suspended
Holloway, A. S., No. 1 Devils Den, Kern Co.	11-25-18	1,848	suspended
Lincoln Pet., No. 1 Devils Den, Kern Co.	10-25-18	1,139	hd. sh. drilling
Hanna, Tom, No. 1 Devils Den, Kern Co.	25-25-18	3,516	suspended
Pyramid Hills Oil Co., No. 1 Devils Den, Kern Co.	24-25-18	3,520	br. sh. drilling
Fowler, F., No. 1 Blackwell Corner, Kern Co.	15-26-19	3,170	suspended
Rio Cal Pet., No. 1 Shale Hills, Kern Co.	2-27-18	2,355	suspended
Associated, No. 1 Lost Hills, Kern Co.	2-26-20	3,401	hd. sh. drilling
Seminole Oil Co., No. 1 Lost Hills, Kern Co.	29-25-21	[illegible]	suspended
Caravel Pet. Co., No. 1 Edison, Kern Co.	19-30-30	571	sd. sh. drilling
Jergins, A. T., No. 1 Edison, Kern Co.	20-30-30	2,767	abandoned
Mohawk Pet., No. 1 Weed Patch, Kern Co.	30-30-29	5,958	prod. test
Hogan, Dana, No. 1 Weed Patch, Kern Co.	32-30-29	5,884	prod. test
Descanso Oil Co., No. 1 Wheeler Ridge, Kern Co.	31-11-19	2,620	suspended
Gatton & Luethe, No. 1 Madera, Madera Co.	22-10-17	2,301	sd. sh. drilling
Bergman, Harry, No. 1 Kingsburg, Fresno Co.	12-12-21	4,023	cemented
Graham & Loftus, No. 1 Raisin City, Fresno Co.	20-15-18	5,120	oil showing
Emerich Oil Co., No. 1 Mendota, Fresno Co.	35-13-13	1,670	sd. sh. drilling
Hogan, Dana, No. 1 Joaquin Ridge, Fresno Co.	28-20-16	mtl.	building rig
Kent & McDonald, No. 1 Carrizo Plains, S. Luis Obispo Co.	3-32-22	3,830	fishing
Paso Robles Oil Co., No. 1 Edna, San Luis Obispo Co.	27-27-11	4,191	suspended
Shell, No. 1 San Miguel, San Luis Obispo Co.	4-25-12	5,977	abandoned
Guess, E. B., No. 1 Corcoran, Kings Co.	7-21-21	6,197	suspended
Brown, A. M., No. 1 Cloud, Kings Co.	10-23-19	1,200	plug 427 ft.
Dudley Dome Oil Co., No. 1 Dudley Ridge, Kings Co.	9-23-20	3,012	suspended
Tulaco Oil Co., No. 1 Ridge, Kings Co.	20-22-20	2,000	suspended
Knudsen & Schmidt, No. 1 Reef Ridge, Kings Co.	36-23-17	6,873	suspended
Kettleman Ridge Oil Co., No. 1 Avenal, Kings Co.	10-23-16	312	suspended
Magee & Stone, No. 2 Aipaugh, Kings Co.	33-24-22	rig	suspended
Dil-Harp Oil Co., No. 1 Delano, Tulare Co.	25-24-26	1,191	bl. sh. drilling
Napa Oil Co., No. 1 Griffith, Napa Co.	7- 8-3	3,717	bd. sh. drilling
Oakdale Oil Co., No. 1 Oakdale, Stanislaus Co.	5- 2-10	4,813	redrilling
Rushing Oil Co., No. 1 Waterford, Stanislaus Co.	20- 3-13	2,631	suspended
Pacific Northern Oil Co., No. 1 Guinda, Yolo County	23-12-2	3,070	gr. sd. drilling
Buttes Oilfields Co., No. 1 Marysville, Sutter Co.	35-16-1	2,731	gas—shut in
Buttes Oilfields Co., No. 2 Marysville, Sutter Co.	34-16-1	903	sd. sh. drilling
D. & S. O. Synd., well No. 1, Glenn Co.	29-22-5	rig	suspended
Tehama Pet. Co., well No. 1, Glenn Co.	4-22-5	3,790	gas showing
Orland Synd., No. 1 Orland, Tehama Co.	31-23-3	3,748	suspended
Marker Drilling Co., No. 1 Orland, Tehama Co.	21-25-5	3,030	suspended

Weld County Well Believed on Top of Dakota; Rangeley Deep Test Swabbing 75 Barrels

By TOLBERT R. INGRAM
Staff Correspondent, Rocky Mountain Area

DENVER, Colo., May 15.—Nominations of pipe line companies for purchases and allowable outlet of the Hobbs Pool for the first half of May remain unchanged at 28,823 bbls. daily. The California Co. completed one well and Humble Oil & Refining Co. abandoned its No. 1 Hardin. Drilling in Hobbs is expected to be at a standstill when three wells now drilling are completed. The Texas Company completed a 252-bbl. well in Jal Pool. One small completion was reported in Eddy County.

The Anthes test in northeastern Colorado is running high on the Dakota and the next core is expected to disclose its fate. California Co.'s deep test at Rangely is swabbing 75 bbls. per day.

Wyoming is priming for a fight for and against the order of the Secretary of the Interior opening the Maverick Springs Field. Bessemer Oil Co. completed a 35-bbl. well in Poison Spider. Several oil sales were reported.

There were no completions in Montana and only one new location was reported.

NEW MEXICO

Lea County

Pipe line runs from the Hobbs Pool aggregated 864,280 bbls. in April, bringing total runs since proration went into effect up to 32,017,131 bbls. The potential of the field as of May 1 was 1,288,898 bbls. from 192 wells on 174 units. The allowable outlet and nominations of pipe line companies for the first half of May remained unchanged at 28,823 bbls. daily.

Drilling wells in the Hobbs Pool are now down to three and there are no new locations. These will be completed within a week and then it is expected drilling will be at a standstill until conditions improve. Lea County crude was cut to 20 cents on May 1.

Humble Oil & Refining Co.'s No. 1 Hardin, SW cor. NW Section 18-18-38, which showed nothing but sulphur water on all tests, is being plugged and abandoned. It is at the extreme north end of the pool. It was drilled to 4,720 feet. It topped the anhydrite at 1,545 feet and cut the salt at 1,680-2,610 feet. Top of the Brown lime was at 2,870 feet and top of the Terry at 4,172 feet. Elevation is 3,670 feet. Amerada Petroleum Corp.'s No. 3 Hardin, NW cor. SW Section 18, a south offset to the Humble well, is shut down at 4,160 feet for orders. It also made sulphur water.

California Co.'s No. 2 McKinley, C SW NW Section 20-18-38, reported a completion last week, gauged 5,508 bbls. and 6,436,584 feet of gas open flow and 2,851 bbls. and 3,315,816 feet of gas through the tubing. The 2½-inch tubing was run to 4,239 feet. Total depth is 4,241 feet and it topped the Brown lime at 2,960 feet and the Terry at 4,164 feet. Elevation is 3,658 feet.

Texas Pacific Coal & Oil Co.'s No. 4-G State, SW cor. NE Section 24-18-37, is bottomed at 3,950 feet. The 7-inch was cemented at 3,896 feet with 300 sacks. Stanolind Oil & Gas Co.'s No. 8 State, C NW NE Section 9-19-38, is bottomed at 3,995 feet and cemented 7-inch at 3,988 feet with 100 sacks. Same company's No. 29 Byers, C SW NW Section 3-19-38, is bottomed at 4,070 feet with 7-inch cemented at 3,983 feet with 150 sacks. It topped the Terry at 4,018 feet and the pay at 4,040 feet.

In the Jal area, The Texas Company's No. 1-B Shepard, NW cor. SW Section 5-26-37, tested 252 bbls. of oil plus 20 per cent water first 24 hours at a total depth of 3,200 feet and 278 bbls. of oil plus 30 per cent water the second 24 hours. It is making 1,200,000 feet of gas with the oil. E. B. Guess' No. 1 Conditt, C SW SW Section 12-25-36, is running the 10-inch at a total depth of 530 feet in the red beds, and Continental Oil Co. and California Co.'s No. 1-A Wells, SW NE NW Section 12-25-36, cemented 9⅝-inch at 2,766 feet with 325 sacks and is waiting.

In the Lea area, The Texas Company's No. 3-A Lynch, C NW NE Section 34-20-34, is drilling at 705 feet in the red beds and carrying the 10-inch. The 12½-inch was mudded at 575 feet.

Eddy County

Finley, Woods & Brainard's No. 5 Brainard, C NW SW Section 5-18-27, Compton area, was completed at 1,893 feet and is making 15 bbls. on the pump. The pays at 1,816-22 and 1,840-59 feet were shot. It marks a short extension of the pool to the west. R. D. Compton's No. 4 Brainard, SE SE Section 5-18-27 is drilling at 1,740 feet in lime and had a show of gas at 1,435-36 feet and a show of oil at 1,502-05 feet.

Price & Son's No. 1 State, C NE SW Section 15-16-23, northwest of the town of Artesia, is still shut down after spudding 2 feet. Isaac Hanan and others' No. 1 State, NW cor. Section 32-18-31, south of the Jackson Pool, is shut down without spudding after erecting derrick. Western Drilling Co.'s No. 2 Green, C SW NE Section 29-17-29, Jackson area, is drilling at 730 feet in salt and anhydrite, and Harry Leonard and Barnsdall Oil Corp.'s No. 1 Dodd, SW SE SW Section 22-17-29, is drilling at 2,950 feet in dark gray lime.

C. H. Lockhart and others' No. 2 Root, C SW SW Section 7-17-30, is shut down after erecting rig. Flynn, Welch & Yates' No. 64 State, SE NE NW Section 10-19-28, is drilling at 1,325 feet in anhydrite and lime, and their No. 66 State, NW SE SE Section 30-18-28, is a location. R. Spearow and others' No. 1 McClellan, SW NW NE Section 22-22-23, Indian Creek, is drilling at 1,870 feet in gray lime.

Bernalillo County

Norrins Realty Co., Inc.'s No. 1 Paparito grant, NW cor. NE Section 22-9n-1e, southwest of Albuquerque, is shut down at 4,566 feet in valley fill.

Valencia County

Western Natural Resources Corp., Inc.'s No. 2 San Clemente grant, SW cor. NE Section 5-6n-1e, De Chaves area, is drilling at 4,475 feet in brown shale.

San Miguel County

Cabra Springs Oil & Gas Co.'s No. 1, C NE NE Section 22-12n-22, Pino Mesa, has resumed and is making hole at 480 feet.

Santa Fe County

Kelsey Clients Development Estate's No. 2 State, C NW Section 22-10n-10e, Crow Butte district, is drilling at 293 feet. It spudded April 17. Location is 2 miles northwest of No. 1, which was abandoned at 1,050 feet in granite.

COLORADO

Weld County

Continental Oil Co.'s No. 1 Anthes, C NE NE Section 24-8n-59, Buckingham-New Raymer area, joint with the California Co. and Centennial Plains Co., is believed to have reached the top of the Dakota sand and the next core is expected to reveal definite information as to the status of this important test. It is temporarily shut down at a total depth of 6,625 feet, corrected, on account of heavy rains, but the core barrel will be run again as soon as possible. The measurements have been corrected back 4 feet from 6,454 feet down. These put the Muddy sand, the producing horizon at Greasewood, at 6,523-38 feet. The cores from this sand showed gas in the top and oil in the remainder, but no test was made. These showings are considered as favorable as those found in that horizon in the Greasewood wells. After coring below the Muddy to be sure that all sand in that formation had been cut, drilling was resumed. Approximately 10 feet had been made when the returns began reaching the surface. These showed considerable sand and coring was resumed at 6,620.5 feet. A 4.5-foot core was taken with a recovery of 2.5 feet, showing shale and very hard sandstone. This rock was as hard as a grindstone and is believed to be a caprock over the Dakota, or over a more porous part of the sand. Some interpretations are that the hole was about 10 feet in the Dakota when the last core was taken. A similar situation was developed in the Ramsey well 5 miles to the south and it is now believed the hole was 10 to 15 feet in the Dakota before the 5½-foot core was taken showing oil saturation in the top. That was a much thicker saturation in that well than indicated by the cores.

An odd situation developed in the northeastern Colorado wells is shown in the variation of the intervals between the base of the Timpas and the tops of the Muddy and Dakota in the several tests. These intervals, as given by C. T. Lupton, Denver geologist, are as follows: Base of the Timpas to the top of the Muddy in the Ramsey well, 410 feet; Willard well, 420 feet; Platte Valley well, 415 feet; Ida Johnson well, 410 feet, an average of 414 feet minus. The interval in No. 1 Anthes was 413 feet, or about 9 inches less than the average. The interval from the base of the Timpas to the top of the Dakota was 473 feet in the Ramsey well; 535 feet in the Willard well, and 560 feet in the Colorado Associated well. It was 542 feet in No. 1 Anthes. Top of the Dakota in No. 1 Anthes, without regard to the differences in the intervals, appears to be from 36 to 42 feet higher than in the Ramsey gas well. Since there probably was 10 to 15 feet of saturated Dakota in the Ramsey well before coring started, the indications point to 50 to 60 feet of saturated sand in the Dakota in the Anthes well under normal conditions. The importance of this data is its disclosure of favorable structural conditions at No. 1 Anthes for the accumulation of oil in the Dakota if that blanket sand carries oil in northeastern Colorado.

Larimer County

C. Leonard Smith's No. 2 Union Pacific, SW cor. Section 31-12-69, Sand Creek, is bottomed at 615 feet and running the 6¼-inch. There was a show of gas at 610 feet and a show of oil at 560 feet. It is believed to be just a few feet off the objective sand in the Pennsylvanian.

Arapahoe County

MacDeb Drilling Co.'s No. 1 Fitzsimmons, NE Section 7-4s-66, near Aurora, is fishing for pipe at a total depth of 6,128 feet.

Boulder County

Ed Rikhoff and others' No. 1 Blubaugh, SE cor. Section 20-3n-70, Lyons area, landed the 4¾-inch on bottom at 750 feet and resumed drilling.

Fremont County

Dr. T. A. Davis' No. 7 Mojada, NE SW SE Section 21-20-69, South Florence, is drilling at 2,365 feet in blue shale.

Prowers County

Shastatex Oil & Gas Co.'s No. 1 Lotus Oil, NW NE NE Section 15-23-46, Lamar area, joint with the Trojan Oil Co., is shut down for pipe at 200 feet.

Archuleta County

Oil City Petroleum Co.'s No. 4 Crowley, SE NW NE Section 14-32n-1e (corrected location), Chromo Dome, is drilling at 300 feet. At 203 feet it had a show of oil, followed by water at 204 feet.

Park County

South Park Oil Co.'s No. 1 Milligan, NE cor. SE Section 13-8s-76, Jefferson district, landed 4¾-inch on bottom at 3,020 feet and has resumed drilling.

Moffat County

Mountain Fuel Supply Co.'s No. 2 Florence Wilson, C NE NE Section 22-12n-100, Hiawatha district, has spudded in a 7,000-foot rotary test and cemented the 20-inch surface pipe at 105 feet. Same company's No. 1 Hatch, C NW SW Section 9-11n-101, Sugarloaf Dome, is delayed by bad roads which have held up materials. It will go 4,000 to 5,000 feet, if necessary.

Rio Blanco County

California Co.'s No. 1 California-Raven, NW SE Section 30-2n-102, Rangely Dome, is being tested after plugging back from 7,173 feet to 6,315 feet and is swabbing 100 bbls. of fluid, of which 80 per cent is oil, per day. It may be shot. The oil is coming from the Weber (Pennsylvanian) topped at around 6,200 feet.

The Secretary of the Interior has suspended the order issued by Secretary Wilbur shortly before his retirement establishing the 100 per cent measurement basis for all oil produced on the public domain upon which the Government receives a royalty. The order was to have gone into effect May 1. Further hearings are to take place.

WYOMING

An order issued February 28 by the Secretary of the Interior requiring lessees in the Shoshone Indian Reservation in Fremont County to begin producing and marketing oil from their wells on or before September 1, 1933, is becoming an important issue in Wyoming and has many ramifications. The Texas Company, one of the owners of Indian leases upon which there are shut-in wells, filed a protest against the order and Secretary Ickes has granted a hearing on this pro-

test to take place in Washington on May 17. The Maverick Springs Field has been shut in since discovery in 1917 without any pipe line or railroad outlet for the oil. The field is capable of producing 8,000 to 10,000 bbls. of black oil per day. The principal operators are The Texas Company, Standard Oil Co. (Indiana), Ohio Oil Co. and Continental Oil Co.

The Wyoming Public Service Commission issued a certificate to W. R. Weeks authorizing the construction of a pipe line from the oil field to Pavillion, and a branch railroad for the remainder of the distance to Shoshoni. This project would open the entire district, not only for oil, but for agricultural development. The oil companies are reported opposed to the project on the ground that market conditions do not justify the marketing of that grade of oil at this time. The Government is seeking to give to the Indians the benefit of royalties from the oil. The governor of Wyoming, the two state senators and others have taken an active interest in the unusual contest and the hearing at Washington will be largely attended. A group of Indians will go to Washington to make their appeal personally for the opening of the field.

Albany County

S. Marvin James & Co.'s No. 1 Hindry, C SW SW Section 10-13-76, Riverside district, is drilling at 700 feet after setting 8¼-inch at 504 feet. There was a show of oil and gas at 500 feet.

Carbon County

Earl W. Reeder, Inc.'s No. 1 Union Pacific, C SW SW Section 19-20-83, Pass Creek, is drilling after landing 15½-inch on bottom at 500 feet. Ohio Oil Co.'s No. 1 Hazlett, SW Section 34-23-79, Allen Lake, is spudding. If commercial gas is not found in the upper horizons, it may be carried down as a test for oil in the Pennsylvanian.

Ohio Oil Co.'s No. 2 Union Pacific, Section 35-20-88, Lake Valley, or Eight Mile Dome, has been cleaned out and put on production at 3,750 feet in the Dakota. This well was drilled by Producers & Refiners Corp. on Hatfield Oil Co. land. It is making 4,000,000 feet per day after cleaning. Rocky Mountain Gas Co., a subsidiary of the Ohio company, has purchased the Hatfield holdings to augment a gas supply for Rawlins which is connected with the field by a 6-inch line.

Fremont County

The Texas Company's No. 2 State-Ridgway, SE SW SW Section 36-34-95, Alkali Butte, attempted to pull the 7-inch, cemented at 4,911 feet, and found it frozen. It is being cut at 4,410 feet.

Sweetwater County

Mountain Fuel Supply Co.'s No. 2 Mullen, SW NE SE Section 2-17-104, South Baxter Basin, is testing at 1,792 feet in the Frontier. If gas is not commercial, it will drill deeper. Same company's No. 2 Cappers, SW cor. NW Section 12-19-104, North Baxter Basin, is drilling at 2,480 feet in the Frontier.

Natrona County

A completion in Poison Spider was reported in Besser Oil Co.'s No. 7, SW NW NW Section 18-33-82 (corrected), at a total depth of 1,428 feet. It is good for 35 bbls. per day. The Sundance was topped at 1,390 feet. Another well will be drilled shortly by the company. Triangle Oil Co.'s No. 1 Ames, SE cor. Section 29-36-85, North Boone Dome, is resuming at 370 feet. Empire State Oil Co.'s No. 17, SW SE NW Section 12-33-83, Poison Spider, is bottomed at 805 feet in the Morrison and cemented 8¼-inch at 807 feet. Mutual Oil Syndicate's No. 1 Boyer, SW NE NE Section 23-35-79, Midway Dome, a test to the Shannon, is drilling at 2,357 feet and will start coring at 2,400 feet.

MONTANA

Glacier County

One new location was made in the Cut Bank Field in Santa Rita Oil & Gas Co.'s No. 2 Blackfeet, C SE NW Section 15-35-6w, an offset on the west to its No. 1 Blackfeet, a recent completion. Its No. 1 Blackfeet, C SW NE Section 15-35-6w, was completed at 2,903 feet and extended the proven area 4 miles to the north. It was given a shot and on a three days' swabbing test averaged 95 bbls. per day. Santa Rita's No. 1 Jacobson, C NW NW Section 23-37-5w, topped the Kootenai at 2,030 feet, ran 8¼-inch at 2,305 feet and is drilling at 2,365 feet. Same company's No. 1 Olson, NE cor. Section 26-34-6w, topped the Colorado shale at 515 feet, cemented 13⅜-inch at 556 feet with 50 sacks, and is drilling at 820 feet. Par Oil Co.'s No. 1 Haines, SE SE Section 2-34-6w, is preparing to cement off tools at 2,784 feet.

R. C. Tarrant's No. 1 Miller, C NE NE Section 24-34-6w, is running 8¼-inch on top of the Stewart sand at 2,740 feet.

Alberta-Pacific Consolidated Oil Co.'s No. 1 Kiesel, NE cor. NW Section 11-34-6w, found the 10¾-inch frozen. The 8⅝-inch collapsed at 2,115 feet and was swedged out. It will run a 6¼-inch producing string and then pull the 8⅝-inch. Well came in several weeks ago as a producer, but the rig burned before it could be completed. Same company's No. 2 Kiesel, SE cor. NW Section 11-34-6w, has rig up, and its No. 2 Matson, SE NE SW Section 14-34-6w, is drilling at 1,410 feet. Dakota-Montana Oil Co.'s No. 1 Haglund, Sr., SW NW NE Section 14-34-6w, had water at 80, 130 and 265 feet, ran the 13⅜-inch to 410 feet to carry, and is drilling at 512 feet. W. M. Fulton and others' No. 1 Haggerty, NE cor. Section 16-34-6w, is bottomed at 2,100 feet and running the 10-inch. Hannah-Porter Co.'s No. 1 Britton, NW NE NE Section 23-34-6w, is drilling at 1,620 feet in the Colorado shale.

Yellowstone County

W. E. Rice and others' No. 1 Hagerman, SE Section 20-2n-23, Devil's Hole, is drilling at 3,790 feet.

Carbon County

Ohio Oil Co.'s No. 9 Souders, C NE SW Section 2-7s-21, Dry Creek, is standardizing at 5,471 feet before drilling into the Lakota. The 8⅝-inch was set at this depth.

Petroleum County

Oregon-Flatwillow Oil Co.'s No. 1, SE cor. Section 3-13-26, Flatwillow district, is reported to have resumed at 1,300 feet after being idle at that depth for two years.

April Deliveries in Turner Valley Field Less, But Increase Is Expected in Few Months

By VICTOR LAURISTON
Staff Correspondent, Canadian Fields

CHATHAM, Ontario, May 13.—Turner Valley deliveries for April totaled 45,763 bbls. or 1,525 bbls. a day, compared with 48,900 bbls., or 1,577 bbls. a day in March. The April deliveries include 36,366 bbls. of naphtha and 3,979 bbls. of light crude oil to Imperial Oil, Ltd., comparing with 36,353 bbls. of naphtha and 4,456 bbls. of light crude. Deliveries to Regal Oil & Refining Co. were 1,621 bbls. in April, against 1,791 bbls. in March; and deliveries to Bell Refining Co. totaled 3,797 bbls., compared with 6,300 bbls. With the increase in the permitted gas flow recently sanctioned by the Alberta government, some upturn in production may be anticipated, and this may be further increased in the next few months by a number of new completions.

Official figures of Canadian petroleum production for March show 87,218 bbls. from all Canadian fields, compared with 73,087 bbls. in February and 97,484 bbls. in March, 1932. The actual Turner Valley output is considerably in excess of the pipe line runs, since the latter do not include considerable quantities of naphtha sold at the well-head. In March the difference amounted to 25,701 bbls.

Turner Valley

The next completion in the Turner Valley Field will probably be Model Oils' No. 2, LSD 16, Section 22-20-3w5, in the North Turner Valley area. This test is drilling below 5,265 feet and apparently in the Dalhousie sands, and logging about 100 feet higher than Model's No. 1, a half mile farther south. The latter finished in the producing horizon of the lime at 5,905 feet.

Mar-Jon-Freehold's No. 1, LSD 9, Section 28-19-2w5, is being tested by government engineers to determine the rating of the well for gas production. The test got its main production in the deep lime at 5,845 feet, with a wet gas flow reported at 16,000,000 feet a day and 460 bbls. a day naphtha recovery. At this depth it had apparently not reached the main porous horizon of the lime, and it may be deepened.

Pacalta Oils' No. 1, LSD 7, Section 28-18-2w5, has moved most of the drilling equipment from the Warner Oils location on the Highwood structure, and is rigging up. The test should spud in this month. Sunburst-Mid-Royal's No. 1, LSD 14, Section 28-18-2w5, is working on location and hauling equipment. Sterling Pacific Syndicate's No. 1, LSD 1, Section 33-10-2w5, is waiting for better roads to haul equipment.

Hunter Valley Test

In the forest reserve area west of Olds, Hunter Valley Oil Co.'s No. 1, Township 31-10w5, is hauling the last of the equipment, following a prolonged holdup owing to bad roads. Rigging up has started and the test should spud in within a week or two.

Oil City Test

In the old Oil City Field, in Waterton National Park, Oil City Royalties' No. 1, Section 30-1-30w4, is reported to have resumed drilling after standing at about 150 feet through the winter. The test is close to the Lineham discovery well which in 1901 had a reputed flow of 300 bbls. a day from 1,020 feet. The company holds half of the original 100 acres held by John Lineham and associates under a crown grant. Andrew Rutherford is in charge of the drilling, cable tools being used. In the drilling last fall a small show of high grade crude was met at 29 feet, the test going to 41 feet in the Pre-Cambrian overthrust and then passing into the lime.

Wainwright Field

In the Wainwright Field, east central Alberta, there is a prospect of renewed drilling activity. In the area midway between Fabyan and Wainwright, Montreal-Alberta Petroleums' No. 1, LSD 2, Section 15-45-7w4, has been financed for a deep test, and is reported resuming work under the direction of W. J. Williamson, who had charge of the previous drilling. The test was shut down in 1931 at 2,650 feet, but is reported to have been deepened later to 2,900 feet. It got gas and oil shows in the Wainwright heavy crude horizons but not commercial production, and entered the Palaeozoic lime at 2,321 feet. It will be continued for a definite test of the lime.

Shareholders of Western Consolidated Oil Co. met at Edmonton recently when plans were discussed for resumption of work on the company's acreage in the older section of the Wainwright Field. Acreage under consideration for further development lies chiefly in Section 29 and 30. Officers elected at the meeting were: President, A. B. Palmer, Vancouver; vice president, J. F. Maloney, Edmonton; secretary-treasurer, H. O. Patriquin, Edmonton; directors, H. W. B. Douglas, F. J. Mitchell, R. Spencer.

Red Coulee Field

In the Alberta end of the international Red Coulee Field, Devonshire Oils' No. 1, LSD 3, Section 10-1-16w4, is reported making new hole below 2,435 feet after cementing at 2,375 feet. Another shutoff will probably be made around 2,500 feet with the pay around 2,600 feet.

Canadian Imports

Official figures show that imports of petroleum, asphalt and their products into Canada in March, 1933, were valued at $1,861,853, comparing with a value of $1,391,862 in February. Of the March imports the sources were: United States, 85.8 per cent; Peru, 11.5 per cent; Dutch West Indies, 1.3 per cent, and the remainder from various countries. Receipts of crude petroleum in Canada during March totaled 49,336,328 gallons, made up of 41,497,088 gallons from the United States, 4,156,919 gallons from Peru, and 3,682,321 gallons from Venezuela.

Schuler Oil Excitement

Considerable excitement was occasioned recently by reports of shallow oil discoveries near the hamlet of Schuler, in the Medicine Hat area of southeastern Alberta. Oil was skimmed from water drawn from the town well, and was found to burn freely. Considerable quantities of oil were recovered, and a number of leases were filed. A bottle of the fluid was sent to Edmonton for analysis, but the provincial analyst reported it tested pure kerosene. Indications are that the find was merely tank seepage, though a careful check of local tanks failed to show any leaks. Some shallow drilling may be undertaken in the vicinity of the water well.

Drilling in Ontario

Two new gassers have been added in the southwestern Ontario fields. In Essex County, a test by Bon Jasperson of Kingsville on the Harris farm, 2 miles east of that town, has got a good gas production from a sand between 950 and 966 feet. It started with a flow around 500,000 feet a day. It is reported the outfit will be moved to a new location further north, in Maidstone Township, where a test drilled last year by Mr. Jasperson got encouraging oil and gas shows in a horizon approximating the Tilbury sand.

In the Tilbury Field, Kent County, Glenwood Syndicate's No. 2, 8 half Lot 10, Concession 13, Tilbury East Township, was shot after plugging back from 1,401 to 1,345 feet. The shot increased the gas flow from 100,000 to 228,000 feet a day, and settled production of 180,000 feet is anticipated. The Glenwood Syndicate will drill a third test in this area, F. H. Stover & Son of Chatham handling the contract. Ralph Dawson's No. 4,

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Report Only Four Completions in Central Ohio, Six in Indiana and Four in Kentucky Fields

By GEORGE A. WHITNEY
Staff Correspondent, Central West Fields

FINDLAY, Ohio, May 15.—In the Lima Field no completions were reported although there are quite a number that are nearing pay sand or shut down. Indiana reported 6 completions, 2 being oil wells, with initial production of 38 bbls., and 4 light gas wells. Illinois failed to report any new completions and Kentucky's share of the new wells was 4, 2 being oil wells with initial of 202 bbls., and 2 dry holes.

In the Lima Field the Upper Sandusky Oil & Gas Co.'s No. 2, on the Mary Loverick farm, Section 28, Crane Township, Wyandot County, is a light gas well, reported showing oil and may develop into an oil producer with a little deeper drilling and a shot. Jones & Coyle are drilling No. 3 on the Margaret Brillhardt farm, same section and township. Donaldson and others are drilling No. 1 on the Minor Koechler farm, Section 20, same township, and McPheron and others are drilling No. 2 on the Carl Smith farm, Section 33, same township, and nearing the pay sand. O'Neal and others are drilling around 1,000 feet in No. 1 on the Arthur Ruehle farm, Section 1, Crawford Township, Wyandot County. In Pitt Township, same county, Newcomer and others are shut down in No. 1 on the Albert Reber farm, Section 24.

Davis and others' test on the C. B. Holloway farm, Section 7, Monclova Township, Lucas County, is still shut down at a depth of 1,925 feet. Lewis Ennis Oil & Gas Co. is shut down at 2,225 feet on the E. B. Brown farm, in Sections 29-30, Grand Prairie Township, Marion County.

CENTRAL OHIO

Four completions were reported from the Central Ohio Field, the best being Preston Oil Co.'s No. 2-1,521 on the Ward Little farm, Section 17, Perry Township, Coshocton County, which produced an initial production after a shot of 76 bbls., and is said to be a 25-bbl. well a few days after being brought in. Pure Oil Co. has a rig in for No. 1 on the Ray Hayes farm, in Newcastle Township, same county.

In Fairfield County the City Natural Gas Works' No. 4 on the Cyrus B. Ricketts farm, Section 12, Berne Township, drilled into water at 636 feet and goes as a dry hole unless drilled deeper and the water cased off.

In Knox County Pure Oil Co. made a location for No. 2 on the J. D. Reed farm, Section 2, Jackson Township. H. E. Perkins and others are reported drilling at a total depth of 4,020 feet on the H. E. Perkins farm, Section 32, Monroe Township, same county.

In Licking County the Wehrle Gas Co. has a rig on the Gail Beker farm, Section 1, Granville Township, and Ridgeway and others have a rig on the Besse Fhoyt farm, Section 17, Perry Township, same county.

In Athens County Smith & White are drilling No. 2 on the William Roach farm, Section 7, York Township, and Clark, Talbott and others are drilling on the S. L. Glover farm in fractional Section 5, Berne Township.

In Tuscarawas County the Hopewell Oil & Gas Co. has a rig on the G. H. Nursey farm, in Lot 22, Washington Township. Frey and others made a location on the H. B. Gobert farm, Section 7, Fairfield Township. Lynch Oil Co. has a rig up for No. 3 on the Robert McKeen farm in Section 21-22, Oxford Township, same county.

In Stark County, Plain Township, Ohio Fuel Gas Co. drilled in a gas well in No. 2-5,713 on the Anna Gill farm, Section 18. Cunningham Natural Gas Co. is drilling No. 1 on the F. & A. Willaman farm, Section 17, same township. Brendel Producing Co. is drilling No. 1 on the Minnie A. Sheets farm, Section 8, same township. Stolz and others have a rig in for No. 1 on the Lynhurst Addition in Section 17, same township, and East Ohio Gas Co. is drilling No. 1 on the T. and H. McDowell farm, Section 16, Plain Township, same county. East Ohio Gas Co. has a rig in for No. 1 on the J. W. and Celestie Shook farm, Section 7, Jackson Township, Stark County.

In Guernsey County, Westland Township, C. C. Wharton made a location for No. 2 on the H. H. and May Turner farm, Section 10.

In Carroll County, Collins, Linsell and others drilled a dry hole on the Thomas Laggett farm, Section 34, at a depth of 1,213 feet and the casing has been pulled.

Field Pickups

Stolz and others are reported fishing at 2,200 feet on the Joe E. Beach farm, Section 6, Berlin Township, Holmes County.

Ohio Guel Gas Co. is reported drilling No. 1-5,720 on the R. E. Ives farm, Lot 94, Eaton Township, Lorain County.

Brendel Producing Co. is drilling close to 3,000 feet in No. 1 on the J. S. Unger farm, Section 17, Plain Township, Stark County. Cunningham Gas Co. is drilling around 2,200 feet in No. 1 on the Joe Herman farm, Section 17, same township. Cable and others are drilling around 4,200 feet in No. 1 on the O. Clovis farm, Section 25, Jackson Township, same county. Canton Drop Forge is drilling around 600 feet on its own prop-

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Only Dry Holes Reported From Eastern Fields; New Tests in Ritchie County, West Virginia

By STAFF CORRESPONDENT

PITTSBURGH, Pa., May 15.—Drilling in the lower Eastern fields is at the lowest point in years. In scattered sections, and in the areas of new pool extensions, there is activity but nothing of a regular drilling program. No gas wells and no producers were completed during the week. Three tests were abandoned as dry holes.

SOUTHEAST OHIO

Two tests in Southeast Ohio ended as dry holes. In Noble County, Harper Brothers drilled a second test on the Marion Harper farm in the SW of Section 32, Enoch Township, through the 800-foot sand and to a depth of 1,000 feet. It was dry in all sands.

In Washington County, W. H. Knowlton and others drilled a test on the James Harris farm in Section 33, Grandview Township. It found both the Injun and Squaw sands dry and ended at a depth of 1,680 feet.

Casing is being pulled in the deep test of Benedum & Trees on the E. E. Knowlton farm in Section 10, Independence Township, Washington County. It is reported the hole will be plugged below the Ohio shale and that formation shot to determine the volume of gas at that depth or around 4,200 feet.

Drilling in Ohio

In Coshocton County, Kundtz Hulse, Inc., and others have the material on the ground for a second test on the R. L. McKee farm in Section 17, Perry Township. In Clarke Township the Mehowa Oil & Gas Co. is rigging up to drill on the Sol Haun farm.

Licking and Muskingum Counties appear inactive. In Tuscarawas County the Hopewell Fuel Gas Co. is hauling a rig on the Edward Hursey farm, Lot 22, Washington Township. In Holmes County, a group from Canton, Ohio, is drilling an outside test on the Miller farm in Berlin Township.

In Monroe County, E. G. Cunningham and others are drilling on the Samuel W. Gibson farm in Section 18, Franklin Township. In Vinton County the Cooperative Oil Co. is down 750 feet in No. 3 on its own property in Section 3, Knox Township.

In Richland Township, Belmont County, the scene of some fair wells recently, the Steuben Oil Co. is drilling on the Carroll and Eberts lease in Section 26.

There was no change in Columbiana County. Alcoma Oil & Gas Co.'s test on the Levi Simmond farm in West Township is down 500 feet and the test of George E. Jewell and others on the Lebert Louden farm in Hanover Township remains at 3,983 feet.

In Morgan County, R. C. Whitner is drilling No. 13 on the Cornelia J. Starrett farm in Section 34, Deerfield Township. In Medina County, F. E. Barnhard and others reached 300 feet in No. 5 on the W. P. White farm, Lot 17, Harrisville Township, and shut down.

In Washington County, Swingle Brothers are down 1,000 feet in No. 4 on the S. J. Weddle farm, Section 28, Grandview Township. Herman Hill and others are drilling a second test on the Junius Greenwood farm, Section 8, Newport Township.

WEST VIRGINIA

For the first time in many years no wells were completed in West Virginia in a week. Some new work was started, including new tests in Ritchie County.

In Clay district, Ritchie County, the scene of the recent fair producer which continues to flow 50 bbls. a day natural, two new tests were started. Richards Farm Oil Co. completed spudding and are drilling a test on the Frank Ball farm. Egan and others are spudding on the A. H. Adams farm. Frank Finley and others are expected in the Injun sand this week in their test on the Boem and Neeley farm. Lucas and Mahaney are down 800 feet on the Catherine Ball farm. Hinton Farm Oil Co. is drilling on the L. E. Robinson farm, offsetting the producer on the Edgar Hinton farm. H. M. Dilley has reached 940 feet on the Michael Moran farm. Outside of Clay district, Ritchie County is inactive.

In Calhoun County a new test starting is that of Chemical Oil Co. on the Margaret J. Webb farm in Sheridan district. In Lee district the deeper test of F. F. McIntosh on the Charles and John Davis farm has reached 2,862 feet. In Sherman district, C. B. Lewis and others are down 1,135 feet on the W. T. Kelley farm.

In Roane County, on Buffington Run of Laurel Creek of Henrys Fork, in Spencer district, George E. Smith and others have started drilling a second test on the C. A. Kendall farm. In the same district, D. S. Fisher and others have reached 2,065 feet on the Stella V. Knotts farm. On Buffalo Creek in Curtis district the Reedy Oil & Gas Co. is building a rig for a second test on the G. A. Knopp farm.

In Cabell County, G. W. Gwinn Brothers & Co. are drilling on the Gwinn Brothers & Co. lot in Guyandotte district. It is drilling in the Injun sand at a depth of 1,205 feet. Eureka Gas Co. is down 470 feet on the Huntington Sand & Gravel Co. property. C. C. Wolfe and others have resumed spudding on the T. H. Tanner lot.

In Lincoln County the Kanawha Gas & Utilities Co. is spudding in a second test on the Nona John farm in Sheridan district. In Putnam County, Teays Valley Oil & Gas Co. is down for casing at 1,700 feet on the C. H. Cottle farm in Scott district. In Wayne County West Virginia Gas Co. has reached 1,425 feet on the C. M. Watts farm in Union district.

In Boone County Cambridge Gas Co. is testing the casing in No. 5 on the C. C. Lewis farm in Scott district at a depth of 1,890 feet. In Washington district, Pond Fork Oil & Gas Co. is down 1,700 feet in No. 14 on the Cole and Crane lease. In Crook district Pure Oil Co. is down 2,000 feet on the Pocatello C. & C. Co. tract. In Sherman district this company is drilling at 892 feet in No. 61 on the Federal Coal Co. tract and on the LaFollette, Robson and Pritchard Tract C has reached 1,105 feet and is fishing for the tools.

SOUTHWEST PENNSYLVANIA

No new producers or gas wells were completed in Southwest Pennsylvania. In South Franklin Township, Washington

County, Ed Tague drilled a test on the Owen Wright farm through the Dunkard sand, which was dry, and down through the Salt sand. In this formation there was about 15,000 feet of gas a day, but the hole will be plugged and abandoned.

In Amwell Township, Washington County, the test of Hallam and Lewis on the John Roach farm is down 2,055 feet. The test of the Carnegie Natural Gas Co. on the Mrs. Meunzer farm is drilling at 900 feet. The Pittsburgh Coal vein was at 775 feet. Raymond Orrill is getting ready to drill his No. 3 Martha Hazlett. There are the only three wells now drilling in Southwest Pennsylvania.

Wildcats

In Virgnia all tests are shut down but the Benedum & Trees test on the I. Kaufman farm in Wise County. This test has reached about 2,900 feet.

In lower West Virginia, Benedum & Trees' test on the Pocahontas Coal Co. tract in Big Creek district, McDowell County, is drilling at about 6,580 feet and has not yet reached the Oriskany sand.

Central West Fields

(Continued from Preceding Page)

erty, Section 9, Canton Township, also in Stark County.

INDIANA

Six completions were reported from the Indiana Fields, of which two were oil producers and four were gas wells. The best completion was made by Knapp & Woods on the right of way of the Southern Indiana Gas & Electric Co., NE Section 33, Center Township, Vanderburg County, which showed an initial of 28 bbls. at a total depth of 894 feet.

Sproull and others have completed two wells on the John Larkin farm, Section 19, Perry Township, Martin County. The first well was a dry hole at 522 feet, and No. 2 was brought in as a 10-bbl. pumper at a depth of 537 feet. No. 3, same farm, is ready to spud.

In Harrison County the Indiana Utilities Corp. has drilled in Nos. 1, 2, 3 and 4 on the William Longbottom farm, SW Section 10, Webster Township, and all four are average gas wells for that district. In Taylor Township, same county, James H. Craft, trustee, is reported drilling on the Bettie Foy farm, NW Section 7, and Wyandotte Oil & Gas Co. is drilling No. 2 on the John L. Cunningham farm, same section.

In Vanderburg County Snowden-McSweeney Co. is drilling No. 1 on the Gustav Heilman farm, NE Section 32, Center Township. John Drake and others are drilling No. 5 on the John Effinger farm, NW Section 33, same township. Maxwell Petroleum Co. is drilling No. 1 on the Young farm, same section. L. R. Henley is drilling west of Evansville on the Nick Bassmeier farm, NE Section 15, Perry Township.

Finley E. Black is drilling on the J. J. Stroble farm, SE Section 20, Carter Township.

In Knox County, O. A. Thayer has deepened the well on the Starner Bond farm, SW Section 14, Busseron Township, to 678 feet, where it gauged 1,420,000 feet of gas.

In Vigo County, Pierson, Yeager and others' test on the Dr. John R. Wilson farm, SE Section 8, Prairie Creek Township, is nearing completion in the Niagara lime formation. The Corniferous was dry, although the formations were reported high and a good gas flow was encountered at a relatively shallow depth.

The test drilled by the Coats-Smith Oil Corp. on the Methodist Church land in Section 27, Tippecanoe Township, Tippecanoe County, is still held up with a fishing job, where it is almost through the Trenton lime formation.

KENTUCKY

Four completions were reported from the Western Kentucky area, of which two were producers and two dry holes. In the Cane Run Pool, in the Owensboro Field of Daviess County, Brenner & Adams' test, 150 feet from the north line and 600 feet from the west line of the R. E. Jackson farm, produced an initial of 200 bbls. from a total depth of 680 feet.

Vickers and others' No. 3, 600 feet from the north and west lines of the O. C. Westerfield farm, 4 miles southeast of Whitesville, in Ohio County, was dry at 622 feet.

In the Scottsville Field of Allen County, Kentucky, Morris & Morris drilled in their No. 8 on the T. J. Tabor 100 acres, which produced 2 bbls. at a depth of 400 feet. H. B. Bastress and others' No. 1 on the Will Beam 24-acre farm, drilled in a dry hole at a depth of 600 feet.

Murphy & Wright are reported drilling around 390 feet on the Charles Cox 100 acres in the Bowling Green Field of Warren County.

Hawesville city council is reported considering having the Indiana-Kentucky Gas Corp. pipe natural gas to places of business and homes in the city limits of Hawesville, in Hancock County, Kentucky, just across the Ohio River from Cannelton, Perry County, Indiana. The main line will be along Highway No. 60.

Two Completions in Central Michigan; Mecosta County Not So Hopeful

By GEORGE A. WHITNEY

MOUNT PLEASANT, Mich., May 15. Two completions were reported in the Central Michigan Field. Pure Oil Co.'s No. 2, 330 feet from the north and west lines of the P. O. Mates farm, in the SE SE Section 22, Porter Township, Midland County, is estimated good for 100 bbls. initial, while Gordon Oil Co. and Teaters' No. 1 well, 330 feet from the south line and 990 feet from the west line of the Phineas E. Baxter farm, SE SW NW Section 22, same township, is reported with an initial of 50 bbls. Goll-Graves-Meckling's No. 1, 990 feet from the south line, 990 feet from the east line of the Joseph Otway farm, NW SE SW Section 22, same township, is showing for a commercial producer, with 350 feet of oil in the hole.

Pure Oil Co.'s No. 3 well, 990 feet from the south line and 330 feet from the west line of the P. O. Mates farm, NW SW SE Section 22, Porter Township, Midland County, is in the Dundee and will drill in soon. C. Fred White's No. 1, 990 feet from the south line and 330 feet from the east line of the Joseph Otway farm, E half SE SW, same section, is also in the Dundee and ready to drill in shortly.

Smith Petroleum Co. is reported drilling below 3,100 feet in No. 1, 330 feet from the south and west lines of the Eli Bushree farm, SW SW NE Section 22, Porter Township, Midland County. Stark Oil Co.'s No. 1, 330 feet from the north line and 990 feet from the west line of the Jess B. Richmond farm, SW NW SE, Section 22, same township, is drilling around 3,100 feet.

Because of a marked water encroachment in the second pay of the Dundee formation on the tests that have been deepened to that level, probably most of the tests in line for completion will be drilled into the first pay only.

Mecosta County

Hopes that a commercial oil field would be opened up in Mecosta County were darkened when the Taggart Brothers' test in the Dundee, 1,070 feet from the south line and 400 feet from the west line of the James H. Barton farm, NW SW SW Section 11, Austin Township, drilled into water at a total depth of 3,790 feet. This well showed for approximately 4,000,000 feet of gas from the Michigan series sand but was deepened for a Dundee oil test, the gas being bradenheaded off, and probably the test will be plugged below the gas so it can be saved. This well is in virgin territory and has its chief importance in opening what apparently is a natural gas pool. As far as could be learned no oil showings were found before water was struck in the Dundee. Undoubtedly further tests will be made in the area as the Taggarts have leases on approximately 10,000 acres in Mecosta County.

Drilling Permits

Permit was issued to William J. Wilson, trustee, for well No. 1, 330 feet from the north line and 330 feet from the east line of the William M. and Sophia E. Carter farm, NE SW Section 18, Porter Township, Midland County; to H. F. Friesner for No. 1, 300 feet from the north line and 1,005 feet from the east line of the Oscar Weirich farm, NE NE Section 6, Ferry Township, Oceana County; to Smith Petroleum Co. for well No. 1, 990 feet from the north line and 330 feet from the east line of the Charles H. Wiltse farm, of 80 acres, of N half NE Section 28, Birch Run Township, Saginaw County; to Pure Oil Co. for No. 2, 2,310 feet from the north and east lines of the Mina C. Naramore farm, NE Section 15, Porter Township, Midland County; to J. Mark Harvey, trustee, for No. 1, 330 feet from the south line and 990 feet from the west line of the Farmers State Bank farm, SE SW SE Section 8, Porter Township, Midland County; to Pure Oil Co. for No. "A"-1, 1,725 feet from the north line and 660 feet from the west line of the Anna Corning estate, NW Section 1, Jasper Township, Midland County; to same company for No. 1, 1,965 feet from the north line and 660 feet from the east line of the Frank Sinif farm, N half NE Section 2, same township; to the Columbia Oil & Gas Co. for No. 6 well, 330 feet from the north line and 990 feet from the west line of the George Harnick farm, NE NW SE Section 15, Greendale Township, Midland County; to the Old Dutch Oil & Gas Co., 990 feet from the north line and 355 feet from the east line of the Frank Hallock farm, SE NE NW Section 6, Perry Township, Oceana County; to Charles Strange and George H. Flynn for No. 1, 210 feet from the south line and 1,332 feet from the east line of the W. E. Currie farm, SE SW SE Section 5, Vernon Township, Isabella County; to the McClanaham Oil Co. for No. 1, 330 feet from the south line and 1,320 feet from the east line of the G. R. Hathaway farm, S half S half NE Section 17, Porter Township, Midland County; to Michigan Gas & Oil Corp. for No. 1, 660 feet from the south line and 500 feet from the west line of the W. Busche farm, SW SW Section 10, Wise Township, Isabella County; to O. A. Daniels for No. 1, 935 feet from the north and 130 feet from the west line of the F. G. Morrice estate (part of community lease), NW NW Section 3, Perry Township, Shiawassee County.

Field Pickups

Gordon Oil Co. and Edward Stewart are drilling No. 1, 330 feet from the south line and 990 feet from the east line of the J. Richmond farm, SW SE NW, Section 22, Porter Township, Midland County, also No. 2 well, 330 feet from the south and east lines of the same farm. Gordon Oil Co. is drilling No. 1, 990 feet from the north and west lines of the Muscott and others farm, SE NW NE Section 17, same township.

After a long fishing job to recover tools from the Marshall formation, Columbia Oil & Gas Co. is abandoning the hole on the William Travis farm, NE NE SE Section 32, Greendale Township, Midland County, and will skid the rig and start a new hole. This test is approximately 2 miles due west from Pure Oil Co.'s Yost lease.

William J. Wilson, trustee, has started drilling in the northeast corner of the William M and Sophia Carter farm, SW Section 18, Porter Township, Midland County.

Pure Oil Pipe Line Co. has completed construction of its new line from the Greendale tank farm to the Yost lease in southern Greendale and from there to Porter Township. This new line, of 6⅝-inch and equipped with boosters, is capable of handling 16,000 bbls. of oil a day.

Smith Petroleum Co.'s test in the southwest corner of the Eli Bushree farm, SW SW NE Section 22, Porter Township, Midland County, is drilling below 3,000 feet, and Stork Oil Co.'s test on the Jess B. Richmond farm, SW NW SE Section 22, same township, is also drilling around 3,000 feet.

A. W. Michener has been transferred from Pure Oil Co.'s engineering department at Chicago to Mount Pleasant as assistant superintendent. Bob Hunter, who has been in the Bay City terminal for some time, has been returned to Mount Pleasant as gauger.

Kenneth Day, chief clerk of the central offices of the Michigan division of the Pure Oil Pipe Line Co. at Mount Pleasant, has been transferred to Bay City as terminal foreman. He is succeeded at Mount Pleasant by Frank Di Ranna, who was transferred from a similar position in the company's Pittsburgh offices. The transfers were made last week, Mr. Day having moved his family to Bay City where he will have charge of lake shipments of crude and the terminal office. A few weeks ago David Beach, former assistant superintendent, succeeded M. I. Deuel as superintendent of the Michigan pipe line division, Mr. Deuel having retired.

Canada

(Continued from Page 90)

Tackaberry farm SW Lot 2, Concession 16, Tilbury East, is reported drilling around 600 feet on a test for gas in the Tilbury sand.

In Dover Township, Kent County, Raleigh Development Syndicate's No. 1, Stevens farm, Lot 2, front concession, is reported drilling around 1,000 feet on a test of the Trenton limestone. The location is east of the Union and Petrol producers, and south of a large gasser drilled some years ago by the Ajax Oil & Gas Co. of Toronto. The Ajax well is reputed to have delivered 360,000,000 feet of gas since it came into production and to maintain a rock pressure around 800 pounds, indicating possibilities of a considerable reservoir in this area. The previous drilling further west indicated that the main production came from a narrow fold superimposed on a syncline, a few large producers and several small producers being surrounded by a large proportion of dry holes. The belief has been held by some operators that the Dover West production represented merely the fringe or nose of a larger gas and oil deposit, either under Lake St. Clair to the west or further east where the formation was nearer the surface.

Kansas Fields

(Continued from Page 83)

Section 12-17-11w, made 600 bbls. from 3,129-39 feet.

Cowley County

E. Yarnell's No. 1 Speer, SE cor. NE NE Section 31-33-6, is a machine.

Greenwood County

Sheedy and others' No. 1 Shambaugh, SW cor. NE Section 1-23-9, is a rig. Swartz and others' No. 1 Kulander, NW cor. NE Section 33-23-13, is spudding. B. Young's No. 1 Smith, SW cor. NE Section 11-24-13, is spudding. Ward McGinnis' No. 1 Higgins, SW cor. SE NW Section 4-24-11, was dry and abandoned at 2,010 feet.

Harvey County

Sinclair Prairie Oil Co.'s No. 1 Schroeder, NE cor. SE Section 5-22-3w, made

322 bbls. in 12 hours from 3,506-37 feet. Shell Petroleum Corp.'s No. 1 Nikkel, NW cor. SE SW Section 8-22-3w, made 540 bbls. from 3,170-3,208 feet. Phillips Petroleum Co.'s No. 3 Warkentine, SW cor. Section 20-22-3w, made 245 bbls. from 3,486-3,514 feet.

McPherson County

Sever & Hessman's No. 1 Schrag, SW cor. SE Section 22-19-4w, is a rig. Derby Oil Co.'s No. 3 Lacguement, NW cor. SE Section 20-19-1w, is a location. Dickey Oil Co.'s No. 1 Williams, NE cor. NW Section 26-19-2w, an old well drilling deeper, total depth 2,960 feet. Lario Oil & Gas Co.'s No. 4 Gratton, NE cor. SE SW Section 24-19-2w, was drilling at 2,300 feet. Rosenthal and others' No. 1 Knudson, SW cor. SE Section 22-19-2w, an old well drilling deeper, was drilling at 2,020 feet. Palmer and others' No. 2 Winn, SW cor. SE NW Section 7-20-1w, an old well drilling deeper, total depth 2,982 feet. Whan and others' No. 1 Dixon, NW cor. SW Section 7-19-2w, an old well drilling deeper, made 5 bbls. from 3,044-72 feet. General Petroleum Co.'s No. 1 Middleswartz, NE cor. Section 9-19-2w, was dry and abandoned at 1,680 feet. Lario Oil & Gas Co.'s No. 2 Lewis, NW cor. SW NW Section 36-19-2w, made 452 bbls. from 3,379-92 feet. Johnson and others' No. 2 Shaw, SW cor. Section 21-19-1w, made 30,000,000 feet of gas from 2,930-52 feet. Reed and others' No. 1 Keefer, NW cor. SW NE Section 21-19-1w, was dry and abandoned at 3,475 feet.

Reno County

Hollow and others' No. 1 Hiedebrecht, SW cor. SE NE Section 36-22-4w, is a rig.

Woodson County

Dwyer and others' No. 1 Wolf, NW cor. Section 9-24-14, is a machine. Nye and Kilby's No. 1 Robbins, NW cor. NE Section 17-24-14, was dry and abandoned at 1,750 feet.

MICHIGAN GEOLOGICAL TRIP

W. A. Thomas, chairman, Michigan Academy of Science, Section of Geology and Mineralogy, announces that the section plans its annual field trip on May 27 and 28. The localities examined will be within a radius of 50 miles of Lansing, Mich., and a detail study of the Pennsylvanian formations will be pursued. Many things of interest to the petroleum geologist will be in store on this trip, since the geology in this section is quite complex and many correlation problems are still unsolved. Geologists from neighboring states are also invited.

Gulf Coast Fields and Wildcats

(Continued from Page 86)

The Texas Co.'s No. 9 Wilburn, Henry Griffith League, 580 ft. E of NW cor. and 50 ft. S of N line ..... Sand 4,172-82 ft.

Yount Lee Oil Co.'s No. 22 Chambers County, Wm. Bloodgood Sur., 200 ft. from W line, 262½ ft. from N line of lease ..... Drlg. hard sand, shale and boulders 1,604 ft.

RABBS RIDGE—FORT BEND COUNTY

Cullen & West's No. 1 Gehr, Samuel Kennedy Sur., 330 ft. N, 1,000 ft. E of NW cor. Hamerstram 291-ac. tract ..... Drlg. sand and shale 5,502 ft.

Cullen & West's No. 2 Whitmore, Samuel Kennedy Sur., 476 ft. W of No. 1 and 350 ft. N of S line ..... Rig.

Gulf Prod. Co.'s No. 5 Gubbels, Samuel Kennedy Sur. ... Drlg. shale 3,530 ft.

Humble O. & R. Co. and Gulf Prod. Co.'s No. 14-A F. I. Booth, Samuel Kennedy Sur., 898 ft. E of No. 7 .. Sand 5,300 ft; cmtd. 9-in. csg.

Humble O. & R. Co. and Gulf Prod. Co.'s No. 15-A F. I. Booth, 7,040 ft. E along S line of lease from NW cor. of E ½ of J. Rabb Sur. and 467 ft. N at right angles ..... Shale 5,300 ft; cmtd. 7-in. csg.

Humble O. & R. Co. and Gulf Prod. Co.'s No. 6-A George, J. Rabb Sur., 1,085 ft. E of No. 5 ..... Drlg. sand 5,592 ft.

Humble O. & R. Co. and Gulf Prod. Co.'s No. 13 Lockwood, J. Rabb Sur., 800 ft. E of No. 11 ..... Drlg. shale 5,398 ft.

Humble O. & R. Co. and Gulf Prod. Co.'s No. 18-A Lockwood & Sharp, J. Rabb Sur., 3,114 ft. E along N line of Tract 3 from NW cor. and 1,049 ft. S at right angles ..... Drlg. shale 3,959 ft.

Humble O. & R. Co. and Gulf Prod. Co.'s No. 7 A. E. Meyer, J. Rabb Sur., 7,550 ft. E along S line of 275-ac. tract and 426 ft. N at right angles ..... Sand and lime 5,300 ft; cmtd. csg.

HIGH ISLAND—GALVESTON COUNTY

Yount Lee Oil Co.'s No. 3 Broussard, M. Dunman Sur., 150 ft. E of center of W line of tract ..... Drlg. shale 6,200 ft.

Yount Lee Oil Co.'s No. 34 Cade, N. Fitzsimmons Sur., 356 ft. S of No. 33 ..... Drlg. shale 5,836 ft.

Yount Lee Oil Co.'s No. 35 Cade, N. Fitzsimmons Sur., 600 ft. S of No. 34 ..... Drlg. shale and lime 4,750 ft.

Yount Lee Oil Co.'s No 15 Smith, Martin Dunman Sur., 1,623 ft. from NW line, 315 ft. from SW line ..... Drlg. shale and lime 4,725 ft.

Yount Lee Oil Co.'s No. 16 Smith, Martin Dunman Sur., 300 ft. SE of No. 12 and parallel to land line ..... Drlg. shale 4,770 ft.

ARIOLA—HARDIN COUNTY

Republic Prod. Co.'s No. 3 Ariola fee, Ariola Sur., 400 ft. S of No. 1 ..... Sand showing oil and gas 4,320 ft; cmtd. 7-in. csg. 4,303 ft.

BATSON—HARDIN COUNTY

Danciger O. & R. Co.'s No. 1 Hooks, 95 ft. S, 150 ft. W of NE cor. of Strip 13, Donoghue Sur. ..... Sandy shale showing oil 4,424 ft; set 7-in. csg. 4,389 ft.

SARATOGA—HARDIN COUNTY

Rio Bravo Oil Co.'s No. 97 Jordit, Jordit Sur. ..... Rig.

HOCKLEY—HARRIS COUNTY

John Deering's No. 3 Warren, T. A. Scully Sur., 200 ft. S, 100 ft. W of No. 2 ..... Drlg. shale 2,365 ft.

PIERCE JUNCTION—HARRIS COUNTY

Rio Bravo Oil Co.'s No. 14-A Settegast, J. Kopman Sur. . Set 51 ft. of 4¾-in. screen 5,395 ft; pumping wtr. and little oil.

Rock Drlg. Co.'s No. 1 Herman Est., J. Kopman Sur. No. 44, 788 ft. from E line, 38 ft. from N line of tract ..... Set 91 ft. of 4½-in. screen 4,689 ft; rigging up to pump.

ESPERSON—LIBERTY COUNTY

Cranfill-Reynolds Co.'s No. 10 Moore's Bluff, M. Duncan Sur., 1,500 ft. from E line, 2,100 ft. from N line of 632-ac. tract ..... Drlg. broken salt and sand 7,323 ft; top 7,238 ft.

HANKAMER—LIBERTY COUNTY

Gulf Prod. Co.'s No. 1 Crowe & Jacobs, H.&T.C. Sur., Sec. 21, 900 ft. from W line, 1,700 ft. from S line of N 320 ac. of section ..... Set 32 ft. of 4½-in. screen 4,921 ft; comp. 265 bbls. fluid, 30% b.s. and wtr.; ¾-in. choke; 1,180 lbs. tubing; gravity 26.1° at 80°.

HULL—LIBERTY COUNTY

Aberoil Oil Co.'s No. 1 Barrow, Jesse Devore Sur., 64 ft. from N line, 700 ft. from E line of 10-ac. tract T.D. 6,452 ft; abd.

Eclipse Oil Co.'s No. 1 Gordon, Jesse Devore Sur., 50 ft. S, 50 ft. W of NE cor. Empire 13 acres ..... Drlg. shale 5,850 ft.

CONROE—MONTGOMERY COUNTY

Alpha Oil Co.'s No. 4 Keystone Mills, L. Smith Sur., 467 ft. N and E lines of lease ..... Drlg. shale 752 ft.

Alpha Oil Co.'s No. 5-A Krohn, S. H. Bryan Sur., 396 ft. from N line in center E and W of tract ..... Drill pipe stuck 4,700 ft.

Amerada Pet. Corp.'s No. 1 Hall-Crump, C. A. West Sur., 340 ft. from S line in center of 20-ac. lease E and W ..... Comp. 60 bbls. per hour; ½-in. choke, 5,140 ft.

Atlas Oil Co.'s No. 1 Wahrenberger, R. C. Hamlet Sur., 300 ft. N, 600 ft. E of center of lease ..... Rig standing.

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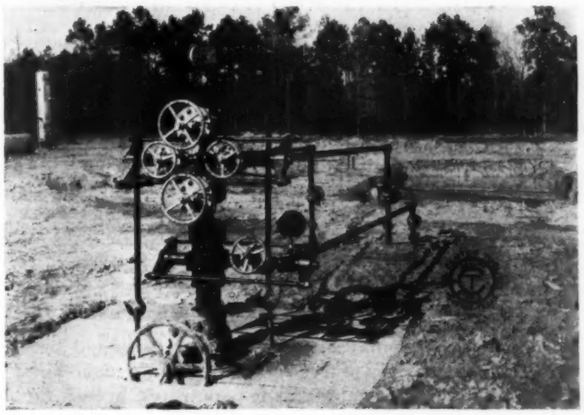

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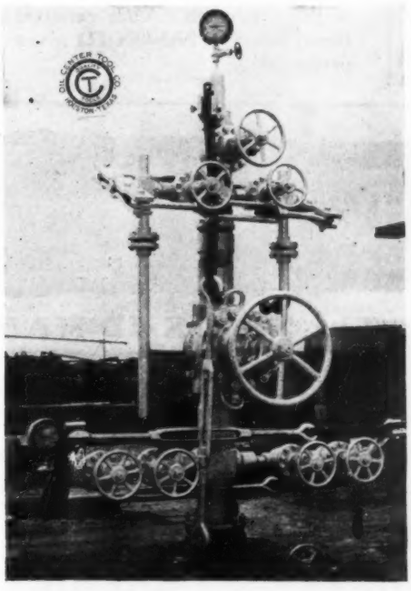

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E. S. Craft's No. 1 Granger, T.&N.O. Sur. No. 14, 467 ft. out of NW cor. of 77-ac. lease	T.D. 1,287 ft.
Farlyn Oil Co. and Feltex Oil Co.'s No. 1 Thompson, C. A. West Sur., center of 10-ac. tract	Comp. 80 bbls. per hour; ½-in. choke, 5,075 ft.
Feltex Oil Co.'s No. 3 Kirby-Bertrand, Wagers Sur., 1,367 ft. S of No. 1, in center of tract E and W	Rig.
Feltex Oil Co.-Kirby Pet. Co.'s No. 5 Felson, G. W. Wagers Sur., 466 ft. from S line in center of lease E and W	Sand 5,122-41 ft; cmtd. 7-in. csg.
Feltex Oil Co.'s No. 2 Keystone Mills, L. Smith Sur.	T.D. 5,035 ft; waiting on csg.
Gulf Coast Drlg. & Prod. Co.'s No. 1 J. L. Hensley, A. Steele Sur., 695 ft. from W line, 205 ft. from S line of 44 ac.	Drlg. shale and lime 3,940 ft.
Gulf Coast Drlg. & Prod. Co.'s No. 4-B Keystone Mills, A. Steele Sur.	Comp. 65 bbls. per hour; ½-in. choke, 5,079 ft.
Gulf Coast Drlg. & Prod. Co.'s No. 6-B Keystone Mills, A. Steele Sur., 238 ft. W of SW cor. of J. L. Hensley lease and 467 ft. N at right angles to S line of lease	Drlg. shale and lime 4,665 ft.
Gulf Coast Drlg. & Prod. Co.'s No. 7-B Keystone Mills, A. Steele Sur., 1,070 ft. W of No. 6 and 469 ft. N of S line of lease	Derrick.
Gulf Coast Drlg. & Prod. Co.'s No. 10 Keystone Mills, A. James Sur., 1,400 ft. from N line, 467 ft. from W line of lease	Drlg. sticky shale 3,260 ft.
Harrison & Abercrombie's No. 5 Massey, John Massey Sur., 500 ft. from S line in center of tract E and W.	Cmtd. 10-in. csg. 1,247 ft.
Hi-Grade Oil Co.'s No. 2 South Tex. Dev. Co., T.&N.O. Sur. No. 5, 345 ft. from W line, 234 ft. from S line of lease	Drlg. gumbo 3,159 ft.
Harrison & Abercrombie's No. 4 Wiggins, 750 ft. from N line and 288 ft. from W line of T. M. Wiggins Sur.	Drlg. shale and lime 3,960 ft.
Hi-Grade Oil Co.'s No. 1 South Tex. Dev. Co., T.&N.O. Sur. No. 5, 360 ft. from N line, 207 ft. from W line of lease	Drlg. sandy shale 4,971 ft.
Houston Oil Co.-Tide Water Oil Co.'s No. 3 Dobbins, Ransom House Sur., 425 ft. from N line, 1,508 ft. from W line	Comp. 55 bbls. per hour; ½-in. choke, 5,099 ft.
Houston Oil Co.-Tide Water Oil Co.'s No. 5 Dobbins, Ransom House Sur., 425 ft. from N line, 466 ft. from E line	Comp. 35 bbls. per hour; ¼-in. choke, 5,126 ft.
Houston Oil Co.-Tide Water Oil Co.'s No. 6 Hamman, C. B. Stewart Sur., 600 ft. from S line and 1,188 ft. from W line	Derrick.
Houston Oil Co.-Tide Water Oil Co.'s No. 2 Moore, Lemuel Smith Sur., 250 ft. from N line, 466 ft. from W line of the 100-ac. lease	Derrick.
Humble O. & R. Co.'s No. 2 Pearl Collins, L. Smith Sur., 300 ft. from S line, 525 ft. from E line of lease	Drlg. shale 4,451 ft.
Humble O. & R. Co.'s No. 1 Dewitt, C. A. West Sur., center of Lots 66, 67, 78 and 79	Rig.
Humble O. & R. Co.'s No. 4 B. E. Jones, Lemuel Smith Sur., 250 ft. from S line, 1,526 ft. from E line	Comp. 82 bbls. per hour; ½-in. choke, 5,133 ft.
Humble O. & R. Co.'s No. 1 E. B. Hill, C. A. West Sur., 660 ft. S of No. 1 Alenius Chilsom, and 15 ft. from W line of lease (Lots 68 and 77)	Comp. 90 bbls. per hour; ½-in. choke, 5,143 ft.
Humble O. & R. Co.'s No. 11 Madeley, Ransom House, 1,398 ft. from N line, 466 ft. from E line	Formerly T.A. 1,005 ft; rigging up to deepen.
Humble O. & R. Co.'s No. 35 Madeley, Ransom House Sur., 425 ft. from S line, 266 ft. from W line	Comp. 85 bbls. per hour; ½-in. choke, 5,118 ft.
Humble O. & R. Co.'s No. 35 Moore, Lemuel Smith Sur., 980 ft. NE of No. 30	Drlg. shale 5,015 ft.
Humble O. & R. Co.'s No. 2 A. Mooreheac, Treviathan Sur., 923 ft. W of No. 1	Drlg. shale 2,689 ft.
Humble O. & R. Co.'s No. 2 E. Moorehead, 466 ft. out of most Southerly NW cor. of L. A. Lang Sur.	Comp. 90 bbls. per hour; ½-in. choke, 5,127 ft.
Humble O. & R. Co.'s No. 5 Plaeffiin, W. M. Real Sur., 664 ft. S of No. 4	Sand 5,126 ft; cmtd. csg.
Humble O. & R. Co.'s No. 46 South Tex. Dev. Co., Theo. Slade Sur., 760 ft. NE of No. 15	Comp. 71 bbls. per hour; ½-in. choke, 5,151 ft.
Humble O. & R. Co.'s No. 1 Stream, C. A. West Sur., 720 ft. N, 620 ft. E of Navarro Oil Co.-Standard's No. 1 Meyers	Drlg. shale 403 ft.
Humble O. & R. Co.'s No. 3 Wiggins & Athey, L. Smith Sur., 500 ft. from SW line, 300 ft. from SE line.	Drlg. hard sand 1,146 ft.
Humble O. & R. Co.'s No. 1 Wiggins & Athey, L. Smith Sur.	Comp. 53 bbls. per hour; ½-in. choke, 5,132 ft.
W. M. Massie's No. 3 Hooper, Fannie Hooper Sur., 1,717 ft. from N line in center E and W	Sand 5,054-5,110 ft; set screen; fishing wash pipe.
Mortex Oil Co.'s No. 1 Springfield, J. E. Springfield Sur., 467 ft. from N line, 467 ft. from W line of 100-ac. lease	Comp. 73 bbls. per hour; 1-in. choke, 5,146 ft.
Navarro Oil Co.'s No. 1-B House, W.C.Ry. Sur., Sec. 14, 675 ft. from W line, 330 ft. from S line of tract.	Cmtd. 10-in. csg. 1,357 ft.
Neversuch Oil Co.'s No. 4 South Tex. Dev. Co., T.&N.O. Sur. No. 5, 1,375 ft. N of No. 3	Coring sandy shale 5,044 ft.
North Star Oil Co.'s No. 1 Granger, 1,400 ft. from E line, 2,600 ft. from N line of T.&N.O. Sur. No. 14.	S.W. sand 5,150-77 ft; to P.B.
Republic Prod. Co.'s No. 2 B. D. Griffin, Wilson Strickland Sur., 194 ft. from E line, 1,972 ft. from N line.	Set 80 ft. screen 5,092 ft; washing.
Southern Liberty Oil Co.'s No. 1 Allen, L. Smith Sur., 466 ft. from N line, 275 ft. from W line	Sand 5,086 ft; cmtd. 7-in. csg. 5,-014 ft.
Southern Liberty Oil Co.'s No. 1 Harris, John Davis Sur., 357 ft. from S line in center E and W of 22.7-ac. lease	Drlg. rock 5,129 ft.
Southern Liberty Oil Co.'s No. 2-B South Tex. Dev. Co., T.&N.O. Sur. No. 5	Drlg. shale and lime 4,671 ft.
Standard Oil Co. of Kansas' No. 1-B Madeley, Ransom House Sur., 400 ft. from N line, 300 ft. from W line	Cmtd. 20-in. csg. 303 ft.
Strake Pet., Inc.'s No. 3 Etheridge, S. H. Bryan Sur., 712 ft. W of No. 1, and 467 ft. from N line	Cmtd. 10-in. csg. 929 ft.
Strake Pet., Inc.'s No. 1 Geo. Hamman, C. B. Stewart Sur., 467 ft. out of SW cor.	Drlg. shale and lime 1,944 ft.
Sun Oil Co.'s No. 1 Jones, Sitton Sur., 466 ft. out of NW cor. of tract	Comp. 89 bbls. per hour; ½-in. choke, 5,039 ft.
Sun Oil Co.'s No. 3 Foster, J. Bricker Sur., 933 ft. W of No. 2 and 466 ft. S of N line	Drlg. hard shale 4,742 ft.
Sun Oil Co.'s No. 4 Foster, John Bricker Sur., 466 ft. out of SW cor.	Coring sand 5,110 ft.
Sun Oil Co.'s No. 3 South Tex. Dev. Co., T.&N.O. Sur. No. 5, 933 ft. N of No. 2 in center of lease E and W.	Rig.
Sun Oil Co.'s No. 4 South Tex. Dev. Co., T.&N.O. Sur. No. 4, 933 ft. N of No. 3 in center of lease E and W.	Rig.
Sun Oil Co.'s No. 5 Foster, John Bricker Sur., 933 ft. S of No. 1 and 467 ft. from E line	Cmtd. 10-in. csg. 1,303 ft.
Sun Oil Co.'s No. 1 Clark, Wilson Strickland Sur., 409 ft. from N line, 467 ft. from E line	Rig.
Sun Oil Co.'s No. 3 B. E. Jones, Strickland Sur., 409 ft. from S line, 467 ft. from E line	Drlg. 226 ft.
Sun Oil Co.'s No. 5 Stewart, J. M. Real Sur., 650 ft. N of No. 1, and 467 ft. from E line	Drlg. shale 285 ft.

Sun Oil Co.'s No. 5 South Tex. Dev. Co., T.&N.O. Sur. No. 5, 164 ft. from N line in center E and W .....Drlg. shale and lime 3,559 ft.
Sun Oil Co.'s No. 3 Jones, Wilson Strickland Sur., 466 ft. from N and E lines of lease .....Comp. 85 bbl. per hr.; 5,128 ft.
The Texas Co.'s No. 21 Moody, 466 ft. out of SW cor. Ransom House Sur. .....Drlg. shale 2,400 ft.
The Texas Co.'s No. 6 Dudley, C. B. Stewart Sur., 1,178 ft. W and 466 ft. N out of SE cor. of lease ....Drlg. sand and boulders 2,031 ft.
The Texas Co.'s No. 26 Moody, Ransom House Sur., S 2,293 ft. 75 deg. W and 1,236 ft. S 15 deg. W from NW cor. of lease .....Drlg. sand rock 1,030 ft.
The Texas Co.'s No. 27 Moody, Ransom House Sur., 2,632 ft. S 75 deg. W, and 2,178 ft. S 15 deg. E from NE cor. of lease .....Drlg. sand and shale 2,134 ft.
The Texas Co.'s No. 14 Rhodes, W. S. Rhodes Sur., 1,060 ft. from W line, 1,470 ft. from S line .....T.D. 5,010 ft; drlg. plug.
Tide Water Oil Co.'s No. 8 Dean, W. C. C. Lynch Sur., 467 ft. out of SW cor. of lease .....Moving in.
Tide Water Oil Co.'s No. 4 Krohn, S. H. Bryan Sur., 1,312 ft. from N line, 467 ft. from E line .....Moving in.
Tide Water Oil Co.'s No. 6 Dean, W. C. C. Lynch, 2,398 ft. from N line, 325 ft. from E line .....Comp. 59 bbls. per hour; ½-in. choke, 5,088 ft.
Tide Water Oil Co.'s No. 5 South Tex. Dev. Co., T.&N. O. Sur. No. 5, 1,459 ft. from W line, 467 ft. from N line of lease .....Comp. flowing 35 bbls. in first ½ hour; ½-in. choke, 5,109 ft.

REFUGIO—REFUGIO COUNTY

United Prod. Corp.'s No. 1-A M. F. Lambert, 666 ft. from N line, 822 ft. from W line of Hews & Brown Sur. .....Coring shale 4,633 ft.

WEST COLUMBIA—BRAZORIA COUNTY

The Texas Co.'s No. 5 Abrams .....Pulling screen and liner to deepen, 2,937 ft.

HUMBLE—HARRIS COUNTY

The Texas Co.'s No. 22 House (W.O.), M. Owens Sur. ..T.D. 5,057 ft; rig up to deepen.

PORT NECHES—ORANGE COUNTY

The Texas Co.'s No. 3 Kuhn (W.O.), Mary E. Hall Sur., No. 2, 587 ft. S, 150 ft. W of NE cor. of survey.....T.D. 4,695 ft; plugged to 4,117 ft; set 21 ft. 8 in. of 4¾-in. screen; swabbing.
The Texas Co.'s No. 1 Orange Nat. Bank, 150 ft. out of NW cor of lease, Jacob Beaumont Sur. ..... Setting up.

SOUTH LOUISIANA FIELDS

ALLEN PARISH

O'Brien Bros., Inc.'s No. 1 Long Bell, 430 ft. from W line, 330 ft. from N line of NW SW Sec. 34-4s-6w.. Abd. 6,248 ft.

ASSUMPTION PARISH

Barnsdall Oil Co.'s No. 1 Williams, 330 ft. out of NE cor. Sec. 38-14s-14e .....Rig.

CALCASIEU PARISH

Union Sulphur Co.'s No. 1 Stout, 1,237 ft. N, 1,167 ft. W of SE cor. Sec. 36-8s-8w .....Rigging up.

CAMERON PARISH

Southern Sulphur Co.'s No. 1 Gulf of Mexico, 330 ft. S, 338 ft. E of SW cor. Sec. 29-15s-10w ..... Rigging up.

CAMERON MEADOWS—CAMERON PARISH

Bertrand-Sutton Oil Co.'s No. 1 School, 500 ft. W, 20 ft. N of SE cor. Sec. 16-14s-13w .....Sand 4,939-47 ft; cmtd. 7-in. csg. 4,728 ft.

CHOCTAW—IBERVILLE PARISH

Standard Oil Co.'s No. 4 Myrtle Grove, 2,350 ft. S, 150 ft. W of NE cor. NW Sec. 52-9s-11e .....Drlg. 850 ft.

DARROW—ASCENSION PARISH

Rio Bravo Oil Co.'s No. 2 Community, Sec. 31-10s-2e, 1,760 ft. S, 600 ft. W of No. 1 ..... Set 21 ft. of 7-in. screen 4,827 ft; failed to flow; pumping.
Rio Bravo Oil Co.'s No. 1 Gumbel, 4,000 ft. W, 250 ft. S of NE cor. of S. Gumbel & Co. tract, Sec. 33-10s-2e..Coring sandy shale 5,925 ft.

GUEYDAN—VERMILLION PARISH

Pure Oil Co.'s No. 2 Mulvey, Sec. 34-11s-1w, 1,515 ft. from N line, 1,150 ft. from E line of tract .....Pulling screen to deepen 4,880 ft.
Pure Oil Co.'s No. 3 Mulvey, 600 ft. S, 2,369 ft. E of NW cor. Sec. 34-11s-1w .....Pulling screen to deepen 4,378 ft.

LOCKPORT—CALCASIEU PARISH

Magnolia Pet. Co.'s No. 8 State Bayou D'Inde, 865 ft. E, 570 ft. N of SW cor. NE Sec. 8-10s-9w .....Driving piling for derrick.

HACKBERRY—CAMERON PARISH

Calcasieu Oil Co.'s No. 2 Hanszen, Sec. 14-12s-10w, 400 ft. W, 200 ft. S of No. 1 .....Drlg. shale 5,100 ft.
East Hackberry Oil Co.'s No. 1 Landry, 2,957 ft. E, 156 ft. S of SW cor. Sec. 13-12s-10w, in Sec. 36.....Oil sand 2,613-33 ft.
Gulf Ref. Co.'s No. 11 Irwin, Sec. 13-12s-10w, 200 ft. N and 100 ft. E of No. 9 ..... Spudded.
The Texas Co.'s No. 10-B State, 1,000 ft. E, 300 ft. N of NE cor. Sec. 13-12s-10w .....Drlg. shale 7,250 ft.
Union Sulphur Co.'s No. 5 Gulf Land-Humble lease, Sec. 11-12s-10w, 300 ft. N of No. 1 .....Hard lime 6,300 ft.

IOWA—CALCASIEU AND JEFF DAVIS PARISHES

Magnolia Pet. Co.'s No. 1 Gillson, 330 ft. out of SE cor. NE Sec. 12-9s-7w .....Drlg. shale 3,925 ft.
Magnolia Pet. Co.'s No. 1 Willett, 330 ft. N and E out of SW cor. NW Sec. 7-9s-6w .....Moving in rig.
Shell Pet. Corp.'s No. 4 Fontenot, Sec. 7-9s-6w, 330 ft. out of NW cor. of lease .....Derrick.
Shell Pet. Corp.'s No. 4 Heyd, 2,122 ft. W, 1,310 ft. S of NE cor. Sec. 13-9s-7w .....Drlg. sticky shale 1,954 ft.
Shell Pet. Corp.'s No. 1 Stafford, 825 ft. S, 325 ft. E of NW cor. Sec. 18-9s-6w .....T.D. 7,021 ft; plugged to 6,951 ft.

JEFFERSON DAVIS PARISH

Humble O. & R. Co.'s No. 2 Devilbiss, 1,850 ft. S, 250 ft. W of NE cor. Sec. 14-9s-4w .....Drlg. shale 4,562 ft.

JENNINGS—ACADIA PARISH

Yount Lee Oil Co.'s No. 12 Houssierre-Latrielle, Sec. 47-9s-2w, 380 ft. SW of No. 5 and 400 ft. NE of No. 4 .....Drlg. hard sand 5,005 ft.

LA FOURCHE PARISH

V. N. Miller's No. 1 Sanbury, 150 ft. N, 100 ft. E of SW cor. Sec. 65-15s-15e .....Drlg. gumbo 535 ft.
Southern Sulphur Co.'s No. 1 State-Bay Marchand, 617 ft. E, 710 ft. S of SW cor. Sec. 20, in Sec. 29-22s-23e.Rigging up.

PLAQUEMINES PARISH

The Texas Co.'s No. 8 Garden Island, 497 ft. E, 172 ft. N of SW cor. Sec. 107-23s-32e .....Shale 1,798 ft.
Texas Gulf Sulphur Co.'s No. 1 LaFourche Levee district, 595 ft. from N line, 75 ft. from W line of Sec. 12-18s-25e ..... No report.

PORT BARRE—ST. LANDRY PARISH

The Texas Co.'s No. 15 Botney Bay, 100 ft. out of most southerly NE cor. of lease, Sec. 4-6s-5e .....Drlg. sand 3,210 ft.

STARKS—CALCASIEU PARISH

Gulf Ref. Co.'s No. 32 Lutcher-Moore, 1,863 ft. N, 650 ft. E of SW cor. Sec. 19-9s-12w .....Drlg. sand 3,422 ft.

SWEET LAKE—CAMERON PARISH

Pure Oil Co.'s No. 11 Yount Lee, Sec. 13-13s-8w, 800 ft. S 66 deg. 42 min. from No. 9 ..... Hard shale 7,982 ft; reaming.

ST. BERNARD PARISH

Southern Sulphur Co.'s No. 1 State-Lake Borgne, 850 ft. N, 330 ft. E of SE cor. Sec. 33-13s-15e .....Rig.
Southern Sulphur Co.'s No. 1 Lake Levy, 400 ft. S, 500 ft. N of SW cor. Sec. 28-13s-15e .....Rigging up.

SULPHUR—CALCASIEU PARISH

Union Sulphur Co.'s No. 727 fee, 75 ft. N, 1,270 ft. W of SE cor. SE NW Sec. 29-9s-10w .....Drlg. rock 5,078 ft.
Union Sulphur Co.'s No. 780 fee, 465 ft. N and 536 ft. E of center of Sec. 29-9s-10e .....Drlg. gumbo 2,250 ft.

8 "KING-CLIP" features
GATE VALVE

1 Ample packing space. Gland follower in 1 inch and larger sizes.

2 Bronze stem. Strong, heavy threads always in full contact, with valve open or closed. Repacking shoulder at top of thread.

3 No stem-thread corrosion. Bronze bushing cast in bonnet protects threads from contact with iron.

4 Channels to drain bonnet.

5 Horseshoe band disc-stem connection adds strength to bronze disc. Sharply tapered solid wedge disc is well suited to handling heavy fluids.

6 Rolled-in bronze seat rings. Will not loosen and cause leakage.

7 Extra long pipe thread in heavy iron body prevents pipe ends jamming against diaphragm or seat rings.

8 Good workmanship.

The ¼ to 2 inch sizes are recommended for 150 lb. SP (450° F.) or 225 lb. GLP (150 F.), and the 2-½ to 4 inch sizes for 125 lb. SP or 175 lb. GLP. "King-clip" Gate Valves are also available in outside screw and quick operating types, bronze mounted or all-iron,

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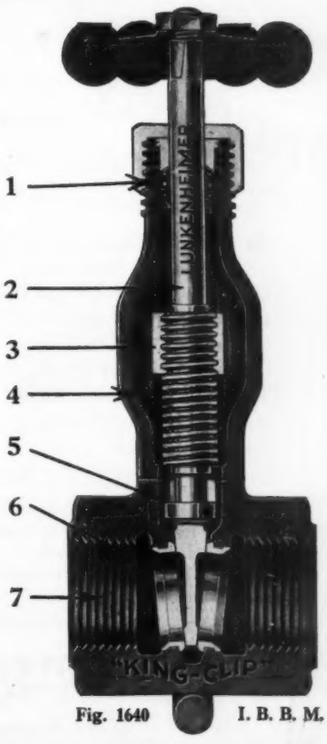

Fig. 1640 I. B. B. M.

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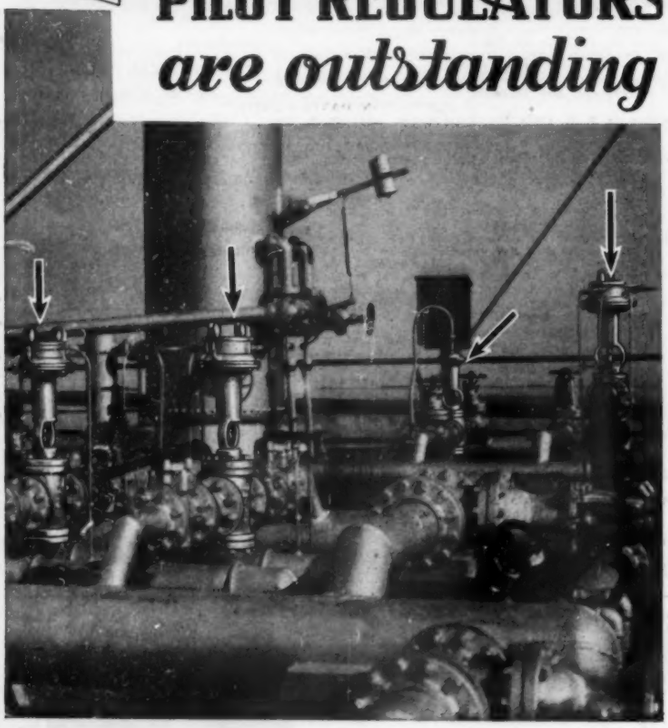

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● The installation above is a trap hook-up in the California Kettleman Hills field. From left to right the arrows indicate two FISHER Type No. 4255 WIZARD Pilot Back Pressure Regulators operating on 500 lb. pressure. In the back ground is a FISHER Type No. 555 Direct Operated Regulator operating at 60 lb. pressure, and right is the FISHER Type No. 580 with WIZARD Pilot on 500 lb. service. An outstanding installation of FISHER controls giving outstanding service.

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YOU WILL WANT INFORMATION ON THE WIZARD PILOT

Write for Bulletin No. 70

Union Sulphur Co.'s No. 782 fee, Sec. 29-9s-10w ..... Drlg. shale and sand 2,850 ft.

TERREBONNE PARISH

The Texas Co.'s No. 8 State-Caillou Island, 1,050 ft. S, 2,770 ft. E of NW cor. Sec. 20-23s-20e ..... Spudded.

The Texas Co.'s No. 8 State-Dog Lake, 4,067 ft. W, 1,377 ft. N of SE cor. Sec. 31-21s-14e ..... Hard sand 2,414 ft.

The Texas Co.'s No. 18 State-Lake Barre, 1,876 ft. W, 551 ft. S of NW cor. Sec. 30, in Sec. 36-21s-20e .. Salt 2,125 ft.

VERMILLION PARISH

Shell Pet. Corp.'s No. 1 Herbert, 2,310 ft. W, 330 ft. N of SE cor. Sec. 10-15s-1e ..... Coring hard sand 7,350 ft.

VINTON—CALCASIEU PARISH

Marrs McLean's No. 15 Gray, Sec. 33-10s-12w ..... No report.

TEXAS

MISCELLANEOUS WILDCATS

AUSTIN COUNTY

Cranfill-Reynolds Co.'s No. 1 Swearingen, 1,705 ft. NE along SE line from S cor. of C. K. Hamm Sur., and 336 ft. NW at right angles ..... Drlg. sticky shale 3,946 ft.

BRAZORIA COUNTY

Amerada Pet. Corp. and Rycade Oil Corp.'s No. 3 Seaburn, 1,350 ft. E of W line and 4,550 ft. S of N line of Austin & Williams Sur. ..... Set 90 ft. of 9⅝-in. screen on bottom of full string 9⅝-in. csg.; flowed by heads; killed to run tubing.

E. A. Anderson et al's No. 1 Reynold, Johnson, Walker & Borden League, 5,502 ft. from W line, 850 ft. from W line of 122-ac. lease ..... Derrick; moving in rig.

Danciger O. & R. Co.'s No. 2 Hunt, Pledger, 6,550 ft. from E line, 6,550 ft. from S line of W. Carson Sur.. Cored sand 6,752-62 ft; reaming.

Tri-fin Oil Co.'s No. 1 Moers, 1,635 ft. SW of Chocolate Bayou, 693 ft. SE of NW line of F. Moore Sur. ..... S.D. 5,275 ft.

BRAZOS COUNTY

Adkins & O'Neill's No. 1 Clay, 1,150 ft. E, 5,750 ft. N of SW cor. of Walter Southerland Sur. ..... Shale 3,534 ft; S.D.; W.O.

CHAMBERS COUNTY

Mills & Jones' No. 1 Gan, John S. Roberts Sur., 255 ft. W, 1,052.72 ft. S of NE cor. of 138-ac. tract .... Drlg. gumbo 819 ft.

COLORADO COUNTY

Danciger O. & G. Co. and L. E. Hults' No. 1 C. L. Raver, B.B.B.&C. Sur., Sec. 1, 990 ft. out of SW cor. of 477-ac. tract ..... Drlg. shale 3,994 ft.

Fabrigus & Poole's No. 1 Lake Side Irrigation, 1,500 ft. SE, 500 ft. NE NW cor. Patrick Real Sur. ..... T.D. 1,445 ft; cmtd. 12½-in. csg. 1,150 ft.

Humble O. & R. Co.'s No. 1 John McShane, L.&G.N. Sur., Sec. 42, 466 ft. out of NE cor of tract ..... Drlg. shale 5,822 ft.

Plymouth Oil Co.'s No. 1 Ream, 330 ft. out of NE cor. of L.&G.N. Sur. No. 47 ..... Drlg. shale 6,159 ft.

PORT BEND COUNTY

Naylor & DeCosta's No. 1 Naylor, 6,350 ft. N, 55 deg. E from SW cor. 653-ac. tract in Christman Sur. .... T.D. 7,014 ft; P.B. to 5,600 ft.

GRIMES COUNTY

Koch et al's No. 1 Haferkamp, Samuel Fulton Sur., 335 ft. from S line, 347 ft. from E line of 189 acres.. Drlg. shale and lime 1,017 ft.

Southwest Pet. Co.'s No. 1 Greer, Pat O'Connor Sur., 200 ft. from W line, 400 ft. from N line of 150-ac. tract ..... Cmtd. 12½-in. csg. 112 ft.

HARRIS COUNTY

H. H. Sloan's (Weatherall) No. 1 Paden, 1,320 ft. from N line, 1,320 ft. from W line of Brock Sur. ..... Cmtd. 10-in. csg. 491 ft; T.D. 520 ft.

H. B. Jordan's No. 1 Cochran, J. L. Jordan Sur., 1,950 ft. from S line, 1,920 ft. from E line ..... Drlg. gumbo 510 ft.

Magnolia Pet. Co.'s No. 1 Kobs, 923 ft. from E line, 1,650 ft. from N line of lower J. M. Hooper Sur. .... Drlg. shale 5,175 ft.

Magnolia Pet. Co.'s No. 1 Martens, Joseph House Sur., 600 ft. from W line, 5,600 ft. from S line of tract .. Drlg. shale 5,296 ft.

Polk Drlg. Co.'s No. 1 Malcomson, A. Schouten Sur., 500 ft. from N line, 1,800 ft. from E line of 283-acre Daniels tract ..... Drlg. shale 1,426 ft.

Sinclair Prairie Oil Co.'s No. 1 Kirmayer, Jesse Denton Sur., 357 ft. S, 601 ft. W of SE cor. Mrs. Willie Moore 200-ac. tract in Kirmayer 800-ac. tract ..... Rigging up.

JACKSON COUNTY

The Texas Co.'s No. 1 Mitchell, S. F. Austin League, 450 ft. W, 450 ft. S of NE cor. of 63-ac. tract, Lot 28, Clement Subd. ..... Drlg. gumbo 3,299 ft.

Turnbull et al's No. 1 Mauritz, John Davis Sur., 330 ft. from W line of 200-ac. tract and 380 ft. N of center of G.H.&S.A. Ry. Sur. ..... Spudded.

JEFFERSON COUNTY

Const O. & G. Co.'s No. 1 Young, Joseph Grigsby Sur., 250 ft. from E line, 160 ft. from S line of 40-ac. tract in Blk. F-5, Lot 6 ..... Drlg. shale 4,843 ft.

Elam & Denny's No. 2 Broussard, John McGaffey Sur. .. Hard sand 3,440 ft.

W. J. Parker's No. 1 Rorck, A. Williams Sur. ..... Drlg. gumbo 1,745 ft.

LIBERTY COUNTY

Mount Lee Oil Co.'s No. 1 E. W. Boyt, H.&T.C. Sur., Sec. 17, 300 ft. from S line, 2,440 ft. from E line of section ..... Drlg. shale and lime 6,452 ft.

MATAGORDA COUNTY

Cockburn Oil Corp.'s No. 5 Hawkins, Shepherds Mott, 2,300 ft. SE, 1,800 ft. NE of W cor. Daniel McCarthy Sur. ..... T.D. 5,320 ft; drlg. sidetracked hole, shale 5,000 ft.

Humble O. & R. Co.'s No. 2 Pierce est., 1,900 ft. NE, 466 ft. NW at right angles out of SW cor. of Pierce estate, same being NW cor. of W. S. and L. B. Hunt tract, W. Carson Sur. ..... Drlg. shale 5,426 ft.

United North & South Dev. Co.'s No. 1 Stoddard (W.O.), 150 ft. W, 545 ft. N of SE cor. of Blk. 53, Buckeye townsite ..... T.D. 7,926 ft; trying to sidetrack 7,730 ft.

United North & South Dev. Co.'s No. 1 Unit 6 (No. 2 Stoddard), 25 ft. each way out of NW cor. of Lot 19, Buckeye Townsite ..... T.D. 6,060 ft; sidetracking 5,593 ft.

United North & South Dev. Co.'s No. 1 Unit 14 (No. 1 Dr. Plotner), 1,216 ft. SE of No. 1 Stoddard and 136 ft. W of right of way of Collegeport branch of St. L.&B.M.R.R., Buckeye ..... Cored sandy shale showing oil and gas 7,719 ft; cmtd. 7-in. csg. 7,675 ft.

United North & South Dev. Co.'s No. 1 Unit 25, 1,335 ft. S, 1,000 ft. E of No. 1 Unit 6 ..... Drlg. surface formation 315 ft.

MONTGOMERY COUNTY

A. H. Parsons et al's No. 2 Drought, Kronknite Sur., 3,000 ft. N, 100 ft. E of NW cor. of A. B. Hill 46⅛ acres ..... Abd. 4,450 ft.

POLK COUNTY

Andersen et al's No. 1 Duke, Peter J. Manard Sur., 330 ft. out of NW cor. of 235-ac. tract ..... Abd. 4,730 ft.

Boone, Clark & Boone's No. 1 Tex. Long Leaf, 2,835 ft. NW along NE line of D. B. McComb Sur. from E cor. and 1,188 ft. SW at right angles ..... Drlg. sandy shale 3,139 ft.

Englewright et al's No. 1 Kingsbury, A. Viesca Sur., 150 ft. NW and 1,114 ft. SW of NW cor. of H. J. Pratt 20 acres ..... Drlg. shale 4,112 ft.

Carl B. King Drlg. Co.'s No. 1 U. S. Alabama Indian Reservation, 3,248 ft. from SW line, 5,022 ft. from SE line of Thomas Colville Sur. ..... Cmtd. 10¾-in. csg. 400 ft.

Kirby Pet. Co.'s No. 1 Kirby Lbr. Co., 466 ft. out of NW cor. of James Stephenson Sur. ..... Derrick.

Roxie Oil Co.'s No. 1 Reed, A. Viesca Sur., 150 ft. out of NW cor. of 479-ac. lease ..... S.D. 4,500 ft.

Dick Schwab's No. 1 Craig, Mary C. Swinney Sur., 330 ft. out of NE cor. of J. A. Munson 80-ac. tract .... Rigging up.

REFUGIO COUNTY

Humble O. & R. Co.'s No. 5 O'Connor, Florentine Rice Sur., 933 ft. NW of No. 4 ..... Sand showing oil 3,204 ft; running 7-in. csg.

Geo. M. Smith's No. 1 J. M. O'Brien, 450 ft. W of center of E line of Winfield Sur. ..... Sand 4,294-4,302 ft; cmtd. csg.

TYLER COUNTY

Republic Prod. Co. and Houston Oil Co.'s No. 1,014-E (No. 2 Sterne fee), Adolph Sterne Sur., 1,300 ft. S, 400 ft. W of No. 1 Sterne fee ..... Drlg. sandy shale 5,240 ft.

VICTORIA COUNTY

Stoneleigh O. & G. Co.'s No. 1 Terrell, SW cor. of R. Manchola Sur. No. 2 ..... Sand 4,430-37 ft; cmtd. 7-in. csg.

The Texas Co.'s No. 7 McFaddin, 6,600 ft. S 15 deg. W, 450 ft. N 75 deg. W at right angles from the NE cor. of the A. J. Gray Sur. ..... T.D. 1,176 ft; blowing gas and mud.

WALLER COUNTY

Trapshooter Reilly Oil & Royalty Co.'s No. 1 Menke, Justo Llende Sur., 600 ft. at right angles from NW line at 250 ft. at right angles from E line of 330-ac. tract ..... Drlg. shale 3,010 ft.

WASHINGTON COUNTY

Cline, Taylor et al's No. 1 Chadwick, Isaac Lee Sur., 560 ft. from N line, 1,000 ft. from E line of 320-ac. tract ..... Drlg. shale 1,861 ft.

WHARTON COUNTY

Pure Oil Co.'s No. 1 Stewart, 2,419 ft. NW, 1,450 ft. NE of S cor. of Sec. 35, Morris & Cummings Sur. ..... Drlg. hard sand and shale 6,477 ft.

Smith & Daniels' No. 1 Mitchell, H.&T.C. Sur. No. 8, 330 ft. from NE line of NE 80-ac. tract in center of tract NW and SE ..... T.D. 6,875 ft; plugged to 3,250 ft.

Wildcat Operations in Southwest Texas

(Continued from Page 84)

CALDWELL COUNTY

F. L. Thomson's No. 1 Lawler, 150 ft. from NW line, 150 ft. from E of road in James Berry Sur. ..... T.D. 2,045 ft; standing 1,500 ft. in oil.

DUVAL COUNTY

Coronado Oil Co.'s No. 1 Wood-Welder, 1,980 ft. from W line, 950 ft. from N line of Sur. No. 211 ..... Rigged up; waiting for wtr.

Huff et al's No. 1 A. Roach 685 ft. from E line, 43 ft. from S line of Blk. 7, Sur. No. 457 ..... Spudded in.

G. G. Mortimer's No. 1 Peal, 330 ft. from S and W lines of Sur. No. 792 ..... Rigged up.

Smith & Hunter's No. 1 Olivarez, 1,640 ft. from N line, 940 ft. from W line of Sur. No. 80 ..... T.D. 3,620 ft; S.D.

Whisenant & Trenchard's No. 1 Duval County Land Co., 1,750 ft. from N line, 1,100 ft. from E line of Sur. No. 76 ..... T.D. 750 ft; S.D. for wtr.

Whisenant & Trenchard's No. 2 Duval County Ranch Co., 300 ft. from N and W lines of E ½ of SE ¼ of Sur. 76 ..... T.D. 20 ft; set surface csg.

Windsor Oil Co.'s No. 1 Peters, 330 ft. from E line, 2,904 ft. from S line of W ½ of S (or 1,600 ft. to N 2,900 ft. to W of Sur.) No. 33 ..... Rigging up.

Wright & Wilson's No. 1 Wood-Welder, 6,150 ft. from N line, 7,200 ft. from W line of Sur. No. 102 ..... T.D. 150 ft; drlg.

FRIO COUNTY

James E. Greenlee's No. 1 W. W. Burns, 612 vrs. to N line, 900 vrs. to W line of Antone Hutzler Sur. ..... T.D. 2,330 ft; set csg; waiting on cement.

GUADALUPE COUNTY

Magnolia Pet. Co.'s No. 1 E. W. Williams, 200 ft. from N and E lines of 100-ac. tract in Green DeWitt Sur. T.D. 2,858 ft; abd.

Buckley Bros.' No. 1 M. T. Howell, 2,800 ft. S of road, 187 ft. from E line of tract in Jacob Darst Sur. .... Moving in tools.

HIDALGO COUNTY

Carl & Johnston's No. 1 Doughty, 187 ft. from S and E lines of Lot 11, Blk. 5 of Subd. of Indios Ranch Sur. in N. Hidalgo ..... T.D. 2,100 ft.; drlg.

Maxwell & Young's No. 1 King, 175 ft. from N and E lines of Lot 8, Blk. 16, Alamo tract ..... Spudded in.

JIM HOGG COUNTY

D. C. DeWitt's No. 1 A. G. Lopez, 3,475 ft. from W line, 425 ft. from N line of Sur. No. 106 ..... T.D. 290 ft; standing.

R. F. Foree's No. 1 Holbien, 150 ft. from N and W lines of Blk. 54, Sec. 9 of Holbien Sur. of Share 3 of Las Animas grant ..... T.D. 2,507 ft; reinstated; to deepen.

Seaton A. Barnes, Jr.'s No. 1 R. Holbien, 220 ft. from W line, 340 ft. from S line, of Blk. 54, share 3, Los Animas tract ..... Rigged up.

KERR COUNTY

J. B. Anderson's No. 1 J. D. Witt, 1,320 ft. from N line, 1,220 ft. from W line of Sec. 1,923, in Hamilton Sur., 4 miles S of Center Point ..... T.D. 1,008 ft; lowering 12½-in. csg.

Eastland Oil Co.'s No. 1 Love, 1,100 ft. SW of Evans & Gant's No. 1 Love ..... Moving in rig.

KLEBERG COUNTY

Harry Clark's No. 1 V. J. Kivlin, 360 ft. from E line, 400 ft. from S line of Sec. 39, Blk. 8, Kleberg Town & Improvement Co. Sur. ..... T.D. 1,300 ft; drlg.

Harris et al's No. 1 Dennett, 660 ft. from S line, 760 ft. from E line of Blk. 7, Sec. 35, Kleberg Town & Improvement Co. Sur. ..... T.D. 2,797 ft; resumed drlg.

LEE COUNTY

Paton Bros.' No. 1-B Turner, 424 ft. from NW line, 375 ft. from NE line of 51.9-ac. tract in David Hudson Sur. ..... T.D. 5,630 ft; drlg.

LIVE OAK COUNTY

Jacob, Buzzini & Pickett's No. 1 J. W. Griffith, 150 ft. N of road and on the McMullen-Live Oak County line, T. Sparks Sur. No. 16 ..... T.D. 915 ft; set csg.

McMULLEN COUNTY

Jacob, Buzzini & Pickett's No. 1 Hurt & Tartt, 160 ft. from SW and SE line of J. W. Williams Sur. 144.... T.D. 1,050 ft; coring.

C. B. Loftin's No. 3 R. H. Brown, 5,283 ft. from N line, 924 ft. from E line of 3,006-ac. tract in Sur. No. 64 ..... T.D. 768 ft; swabbing a little oil.

C. R. Pope, Inc.'s No. 1 A. C. Miles, 200 ft. to E line, 2,375 ft. to S line, Sur. 149 ..... T.D. 1,463 ft; drlg. shale.

S. R. C. and Sinclair Prairie's No. 2 LaChusa, 330 ft. from S and E lines of NW Sec. 36, Sur., 2 miles E from No. 1 ..... Rigged up.

Tarver & Nance Co.'s No. 2 Dickson Farm Mrtg. Co., 700 ft. due W of No. 1, 900 ft. from NE line, 300 ft. from SE line of survey, Sec. 45 ..... T.D. 682 ft.; changing rigs.

NUECES COUNTY

John F. Camp's No. 1 King, 150 ft. from N and W lines of E½ Sec. 29 of Richard King Subd. Sur. Derrick; waiting for rig.

SAN PATRICIO COUNTY

George W. Scruggs' No. 1 Collins, 1,040 ft. from NE line, 700 ft. from SE line of Blk. 36, E. J. McGloin Sur. ..... T.D. 2,756 ft; changing to heavier rig.

STARR COUNTY

B.&B. Oil Co.'s No. 1 Crown Brick & Tile Co., 1,300 ft. S of State Highway No. 4 and 580 ft. from W line of Porcion 87, near La Puerta ..... T.D. 4,530 ft; setting csg.

W. P. Chancellor's (Bryan & Tharp) No. 1 A. Guerra, 26,000 ft. from line, 2,600 ft. from E line of Share No. 6 of San Jose grant, in NE cor. of county ..... T.D. 1,410 ft; T.A.

Chiquita Oil Co.'s No. 1 Starr County Cattle Co., 341 ft. from W line, 371 ft. from S line of Share 60, Partition of Porcions 88 and 89 ..... T.D. 618 ft; drlg.

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Deviation of Natural Gas From Boyle's Law
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F. R. Cooper's No. 1 J. M. Martinez, 150 ft. to S and E lines of A.B.&M. Sur. No. 125 ..... T.D. 2,110 ft; drlg.
Dawson et al's No. 5 Margo, 1,000 ft. from W line, 5,500 ft. from S line of Share 3-B, Por. No. 70, Jurisdiction Mier ..... T.D. 500 ft; drlg.
Goodwin & Yantis' No. 1 Walker, 450 ft. SE of W line of Isabel Lopez property in Sur. 767 ..... T.D. 1,300 ft; abd.
E. H. Stickney's No. 1 H. Gonzales, 300 ft. from E line, 3,166 ft. from S line of H.E.&W.T. Sur. 339 .... T.D. 1,066 ft; drlg.

TRAVIS COUNTY

F. Fuch's No. 1 Rummell, 300 ft. to S line, 150 ft. to E line of 169-ac. tract in Peter Cartwright Sur. ... T.D. 65 ft; S.D.

UVALDE COUNTY

Evans & Thompson's No. 1 Farris, 400 ft. from S and W lines of 635-ac. tract near center of John J. Hammond Sur. ..... T.D. 300 ft; changing rigs.

WEBB COUNTY

Earl Calloway et al's (Osborne) No. 1 Gates, 330 ft. from N and W lines, SE Sec. 14, Blk. 1 (Gates ranch), C.C.S.D.&R.G.N.G.R.R. Sur. ..... T.D. 2,550 ft; abd.
Edwin M. Jones' No. 1 Callaghan, 1,650 ft. from E line, 990 ft. from S line of Sec. 603 of B.S.&F. Sur., 13 miles E from Callaghan Switch ..... T.D. 1,600 ft; drlg.
J. W. Edwards' No. 1 Volpe Bros., 150 ft. from E line of NE SW Sec. 17, Blk. 2, C.C.S.D.&R.G.N.G. Sur., 30 miles SE from Cactus ..... Derrick.
Gibson et al's No. 1 Smith, 150 ft. from NE line, 300 ft. from NW line of Blk. 5, Sur. No. 1,102 ..... T.D. 1,575 ft; coring.
Will Ohlhausen's No. 1 Moses Jones, 273 varas from E line, 516 varas from S line of 100-ac. tract in Sur. No. 1,640 ..... Spudded in.
P. G. Rouse's No. 1 S. M. Withers, 3,000 ft. from E line, 400 ft. from N line of Sur. No. 28 ..... T.D. 1,136 ft; abd.
Seagraves & Salsbury's No. 1 A. E. Gates, 3,650 ft. from S line, 735 ft. from W line of Sec. 66, Blk. 1, C.C.S.D.&R.G.N.G. Sur. ..... T.D. 2,505 ft; abd.; to move 1 mile west.
Seagraves & Salsbury's No. 2 Gates, 330 ft. from N and E lines of SE Sec. 64, Blk. 1 of C.C.S.D.&R.G.N.G. Sur. ..... Rigging up.
Shankle & Roche's No. 1 W. W. Stell, 660 ft. from N and W lines of NW NW of No. 37 Sur., 11 miles N from Mirando City ..... T.D. 1,210 ft; drlg.

WILSON COUNTY

Sexton Pet. Co.'s No. 1 Joe Gutzeit (1,032-ac.), 150 ft. from W line, 150 ft. from S line of road of F. Flores No. 16 Sur. ..... T.D. 175 ft; drlg.

ZAPATA COUNTY

Hamilton, Brower & Crow's No. 1 Slator, 2,111 ft. from SW line, 1,980 ft. from SE line of Blk. 1, Subd. of Slator ranch in J. V. Borrego grant ..... T.D. 1,240 ft.; standing.
O. W. Killam's No. 5 Bruni, 150 ft. from SW and SE lines of Blk. 53, Killam Subd. of Borrego grant .... T.D. 1,830 ft; 2 ft. in sand; set csg.
Stevens & Brown's No. 1 J. M. Garcia, 150 ft. from NE line, 260 ft. from SE line of Blk. 102, Sur. 434.... T.D. 1,430 ft; drlg.
Sarah Poppas' No. 1 Juan V. Cueller, Jr., 150 ft. from NE and SE lines of Blk. 3, Sur. 2 of Poppas Subd. of Por. 34 ..... T.D. 75 ft; drlg.
A. C. Savey et al's No. 1 Flores, 150 ft. from NW line, 206 ft. from NE line of Blk. 8, Share 1 of P. A. Richer Subd. of Porcion No. 86 ..... T.D. 1,705 ft; drlg.
A. H. Wray's No. 1 Gopher Trust Est., in Fullerton Subd. of Share 8 of J. V. Borrego grant ..... T.D. 380 ft; drlg.

ZAVALA COUNTY

Zavala O. & G. Co.'s No. 1 Gates, 1,320 ft. from N line, 1,320 ft. from E line of Hooper & Wade Sur. No. 13.. T.D. 5,503 ft; waiting for wtr.

Southwest Texas Proven Areas

Week Ending May 13

HILBIG POOL—BASTROP COUNTY

Company, well farm name, section and block— Remarks

Humble O. & R. Co.'s No. 2 Friske, 245 ft. from E line, 444 ft. from N line of lease, S. Wolfensbarger Sur... Rigging up.
Humble O. & R. Co.'s No. 2 Hassel ..... Top Serpentine 2,402 ft; I.P. 100 bbls. hourly.

RIDDLE POOL—BASTROP COUNTY

Witherspoon Oil Co.'s No. 1 A. D. Harris, 1,050 ft. from NW line, 3,350 ft. from SW line of John Maxmillan Sur. ..... T.D. 2,309 ft; setting csg.

TULETA POOL—BEE COUNTY

Grisham et al's No. 1 Rapp & Hatch, 1,700 ft. from N line, 2,640 ft. from E line, Sec. 12 of Ragsley's Subd. of Uranga grant ..... Location changed; bldg. derrick.

NORTH GOVERNMENT WELLS POOL—DUVAL COUNTY

W. T. Daniels' No. 1 DeWitt, 150 ft. from N and W lines of SW SW NE Sur. No. 46 ..... T.D. 500 ft; drlg.
George Parr's No. 1 Hahl, 330 ft. from N and W lines of SE of Sur. No. 46 ..... T.D. 1,685 ft; drlg.
George Parr et al's No. 1 Hahl, 330 ft. from N and W lines of SE ¼ of Sur. 46 ..... T.D. 400 ft; drlg.
Hester Bros.' No. 1 fee, 330 ft. from S and E lines of NE of Sur. No. 47 ..... Rigging up.
Navarro Oil Co.'s No. 6 Hahl, 330 ft. from W line, 990 ft. from S line of Sur. No. 360 ..... T.D. 2,304 ft; flowing by heads; no gauge.
Southwest Drlg. Co.'s No. 9 Wendt, 990 ft. from S and E lines of SE of Sur. No. 43 ..... Rigged up; waiting for wtr.
Sun Oil Co.'s No. 1 Mrs. Weiderkehr, 330 ft. from S and E lines of Sur. 359 ..... T.D. 2,261 ft; comp. 10 bbls. dly.
The Texas Company's No. 7 Wendt, 330 ft. from N line, 990 feet from W line of NW of Sur. No. 42 .... T.D. 2,248 ft; comp. 100 bbls. oil and big volume of gas.
The Texas Co.'s No. 6 Wendt, 350 ft. from S line, 990 ft. from E line of N ⅜ of NW ¼ of Sur. 42 ..... Set surface csg.
Wilkins Seacord's No. 2 Lundell, 150 ft. from N and E lines of Sur. No. 48 ..... T.D. 2,322 ft; big gas well; ungauged.

PETERS POOL—DUVAL COUNTY

Shasta Oil Co.'s No. 3 Peters, 330 ft. from N and W lines of S of W 200 acres of S½ of Sur. No. 175.. T.D. 2,393 ft; drlg.

SARNOSA POOL—DUVAL COUNTY

Magnolia Pet. Co.'s No. 3 M. Ruiz, 300 ft. from NW and NE lines of S ¼ of Sur. 576 ..... T.D. 2,466 ft; hole full of oil.
Sarnosa Oil Corp.'s No. 7 Well, 590 ft. SE of No. 6.... Derrick.
Sarnosa Oil Corp.'s No. 6 A. Well, 330 ft. from NW and NE lines of Sur. No. 130 ..... T.D. 2,374 ft; comp. 20 bbls. hrly.
Sun Oil Co.'s No. 3 Cano, 330 ft. from NE and SE lines of Sur. No. 576 ..... Derrick.

JACOB POOL—McMULLEN COUNTY

Longhorn Oil Co.'s No. 2-A C. T. Lark, in E. W. B. Scrugham Sur. ..... T.D. 1,020 ft; recmtng. csg.

SAXET FIELD—NUECES COUNTY

C.N.T. Co.'s No. 1 L. M. Vance, 330 ft. from E line, 1,320 ft. from S line of 255-ac. tract in Sur. 402.. T.D. 4,290 ft; coring.
Gibson Oil Corp.'s No. 2 Rand Morgan, 1,320 ft. from N line, 330 ft. from E line of lease ..... T.D. 5,180 ft; S.D.
Houston Oil Co.'s No. 1 McGregor ..... T.D. 4,744 ft; fishing.
Gulf Port Oil Co.'s No. 3 Frank Bliss, 1,599 ft. to N line, 350 ft. to E line of 225-ac. tract in J. W. Stevens Sur. No. 406 ..... T.D. 5,616 ft; drlg.
Gulf Port Oil Co.'s No. 3 Humphreys, 115 ft. from N line, 330 ft. from W line of lease (S offset to No. 1 Gibson, Rand Morgan Sur.) ..... T.D. 3,700 ft.; drlg.
Gulf Port Oil Co.'s No. 1 Rand Morgan, 330 ft. from N and E lines of 80-ac. lease ..... T.D. 4,905 ft; standing.
Holliday et al's No. 2 Smith 660 ft. N of No. 1 ..... T.D. 4,415 ft; drlg.

Shasta Oil Co.'s No. 1 Erigan, on N end of 10-ac. strip, W of Quiros tract ..... T.D. 4,877 ft; comp. 300 bbls. oil daily on ½-in. choke.

Sinclair Prairie's No. 1 Issencee, 330 ft. from N and W lines of 80-ac. tract in Sur. No. 404 ..... T.D. 4,881 ft; making D.S. test.

MATHIS POOL—SAN PATRICIO COUNTY

Geo. W. Scruggs' No. 1 Collins ..... T.D. 1,515 ft; drlg.

WHITE POINT FIELD—SAN PATRICIO COUNTY

Sazet Oil Co.'s No. 19 Rachel ..... T.D. 7,204 ft.; P.B. to 4,875 ft.; running tubing.

LOS OLMOS POOL—STARR COUNTY

Hooks & Weaver's No. 15 Kelsey Bass, 200 ft. from W line, 150 ft. from S line, NW SE Sec. 6, Pors. 75, 76, 77, jurisdiction Camargo ..... T.D. 1,300 ft; drlg.

Hooks & Weavers' No. 14-A2 Kelsey Bass, 200 ft. from W line, 250 ft. from S line of E 30 acres of NE SW Sec. 6, Pors. 75, 76, 77, Camargo ..... Drlg. 1,268 ft; moving in larger rig.

LAUREL POOL—WEBB COUNTY

Dyck Oil Co.'s No. 4 Garcia-Villareal, 150 ft. from S and E lines of NE NW of Sur. No. 1,100 ..... T.D. 2,215 ft; comp. flowing 150 bbls. daily.

O. W. Killam's No. 2 Garcia-Villareal, 150 ft. from N and W lines of NE SE of Sur. No. 1,100 ..... T.D. 2,385 ft; testing.

Montex Oil Co.'s No. 1 Laurel, 150 ft. from S and E lines of Blk. 4, Sur. No. 270 ..... Derrick.

Shankie & Newton's No. 1 S. Benavides, 330 ft. from S and E lines of Blk. 13, in No. 2,272 Sur. ..... T.D. 40 ft; set surface csg.; W.O.C.

South Texas Oil Co.'s No. 16 Laurel, 150 ft. from S and E lines of Blk. 11, Sur. 271 ..... T.D. 2,288 ft; swabbing.

M. Stein's No. 1 Garcia-Villareal, 150 ft. from SW and NW lines of Sur. No. 720 ..... T.D. 2,292 ft; 500 bbls. daily on choke.

Texas Unity Oil Co.'s No. 1 Yeager, Sur. No. 51 ..... T.D. 200 ft; drlg.

Wise & Jackson's No. 2 Garcia & Villareal, 150 ft. from N and E lines of Blk. 7, Sur. No. 1,100 ..... T.D. 2,210 ft; set csg.

MOCA POOL—WEBB COUNTY

Moca Oil Co.'s No. 4 Duval County Ranch Co., 810 ft. from N line, 120 ft. from W line of Blk. 22, Share 3, Zapata County School Land ..... T.D. 906 ft; tested gas.

ESCOBAS POOL—ZAPATA COUNTY

Lefevre et al's No. 1 M. Garza Hrs., 330 ft. from NW and SW lines of Blk. 53, C. A. Douglas Subd., Zerro ranch, Comitas Grant Sur. ..... T.D. 1,800 ft; drlg.

B. W. Roscoe's No. 3 Bustamente, 300 ft. from NE line, 375 ft. from NW line of SE of Share 32, Comitas grant ..... T.D. 1,242 ft; comp. 25 bbls. dly.

The Texas Co.'s No. 26 Measles, 1,290 ft. from SE line, 300 ft. from SW line, Sur. Cerrito Blanco grant.... T.D. 1,204 ft; comp. 60 bbls. dly.

MIRANDO VALLEY POOL—ZAPATA COUNTY

J. W. Edwards' No. 1 R. Hinnant, 150 ft. from SE lines of Blk. 8, Sur. No. 116 ..... Rigging up.

Wildcat Operations in Louisiana-Arkansas

(Continued from Page 85)

Mrs. A. L. Ibach, tr.'s No. 1 Rambin, 250 ft. S and E, NW cor. NE NE Sec. 32-11-11 ..... W.O. 3,527 ft.

RAPIDES PARISH

Evers & Collingsworth's (was A. G. Beck et al's) No. 1 Hickman-Simmons Lbr. Co., 330 ft. S, 330 ft E, NW cor. Sec. 40-4-1e ..... Drlg. 1,350 ft.

RED RIVER PARISH

Edward & Clay's No. 1 Delta Pecan Co., 1,600 ft. N, 450 ft. E, SW cor. Sec. 27-13-11 ..... Coring 2,458 ft.

SABINE PARISH

R. T. Henderson's No. 1 Sistrunk, 450 ft. N, 150 ft. W, C, Sec. 9-9-13 ..... Showed oil; bailed dry 2,079 ft.

C. D. Loe, tr.'s No. 1 Whitney, 330 ft. N and W, SE cor. NW NE Sec. 19-9-14 ..... Base chalk 2,107 ft; S.D.; W.O. 2,205 ft.

CONVERSE DISTRICT

Lambert et al's No. 1 Edwards, 300 ft. S and E, NW cor. SW NW Sec. 29-9-13 ..... Drlg. 2,070 ft.

H. C. Lessenger's No. 1 Bowman-Hicks, 330 ft. S, 330 ft. E, NW cor. Sec. 13-9-13 ..... Bailed dry 2,021 ft; W.O.

Arkansas

COLUMBIA COUNTY

C. W. Alworth et al's No. 1 W. D. King, SW cor. SE SW Sec. 16-17-20 ..... Derrick.

LITTLE RIVER COUNTY

American Portland Cement Co.'s No. 1 fee, 150 ft. S and E, NW cor. SW NE Sec. 21-12-32 ..... Coring anhydrite 2,326 ft.

MILLER COUNTY

J. T. Humphrey's No. 1 Grace, C SW SW Sec. 9-15-27... Cmtd. 10-in. 206 ft.

Mississippi

LAMAR COUNTY

Lamar Oil Co.'s No. 1 Scott, NE NE Sec. 18-2n-14..... Rigged up.

East Texas

CASS COUNTY

T. H. Pardoe, operator's No. 1 S. A. Orr, in the G. W. Morris Sur., 390 ft. east of the W line of the G. W. Morris Sur., also the east line of the David Frazier Sur. ..... S.D. fuel, 2,160 ft.

Louisiana-Arkansas Proven Areas

North Louisiana

CADDO—BETHANY

Company, well, farm name, section and block—	Remarks:
Tom Collins Pet. Co.'s No. 1 Gill & Lipscomb, 660 ft. N, 1,506 ft. E, SW cor. Sec. 17-16-16	Derrick.

CLAIBORNE PARISH

Haynesville Partnership's No. 1 J. L. Garrett, 200 ft. S and E, NW cor. SW Sec. 25-23-8	Moving in rig.

DESOTO PARISH

B. F. Jenkins' No. 1 P. B. Dyer, SE cor. NW SW Sec. 25-13-12	Derrick.

SABINE PARISH—ZWOLLE

Bryant & Lucas' No. 1 Andries, 360 ft. S, 350 ft. W, NE cor. NW SE Sec. 15-7-11	Began May 7; 10-in. 41 ft; S.D.
Byers et al's No. 1 Ervin & Bishop, 550 ft. E, 450 ft. N, SW cor. Sec. 16-7-11	Drlg. 2,430 ft.
Doyle et al's No. 1 M. D. Russell, 330 ft. N and W, SE cor. NE SE Sec. 23-8-12	Bailing to test; T.D. 2,613 ft.
Graham Prod. Co.'s No. 1 Lites, 330 ft. S and E, NW cor. SE SW Sec. 28-8-11	T.A. 2,700 ft.
Ben Merritt et al's No. 1 L. A. Cook, 336 ft. N, 333 ft. W, SE cor. Sec. 34-8-11	Derrick pattern.
E. F. Neely's No. 1 Garner, SE cor. SW NE Sec. 15-7-11	Moving in rig.
Robertson Drlg. Co.'s No. 1 J. W. Hughes, 1,320 ft. W, C, Sec. 36-8-12	S.D.; W.O. 2,594 ft.
Service Drlg. & Royalties Co.'s No. 4 E. E. Smith, 330 ft. S and W, NE cor. SW SW Sec. 7-7-10	Derrick pattern.
Scully & Beach's No. 3 Lafitte, 1,030 ft. S, 124 ft. E, NW cor. Sec. 13-7-11	T.A. 2,636 ft.
C. H. Tuttle's No. 4 Byrd, 800 ft. S, 920 ft. E, NW cor. NW NW Sec. 7-7-10	Derrick.

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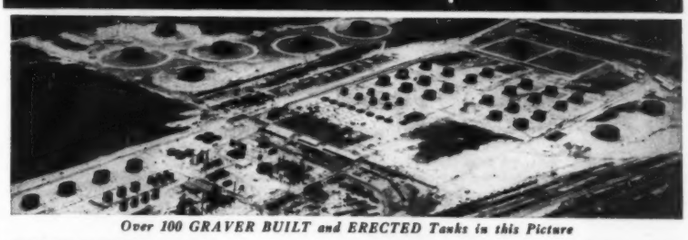

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Fluid Friction Principle Now Applied to Brakes

(Continued from Page 33)

of the stator. In so doing the fluid is cut through by the vanes of the stator. The pockets in the stator in turn direct the fluid back down to the hub, where it is again picked up by the rotor.

The shaft speed of the piece of equipment to which this brake is attached will determine the speed of the rotor. The fluid in the pockets in the rotor is thrown into the stator and in this way is cut by the vanes of the stator and this is the first step in the dissipation of energy. The power required to cut this high velocity stream of fluid may be visualized by trying to cut through the stream of water from a fire hose with a knife.

While in the pockets of the stator, the

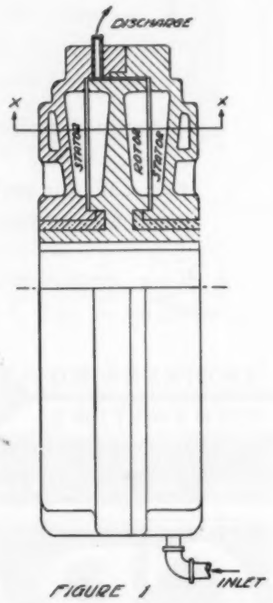


FIGURE 1

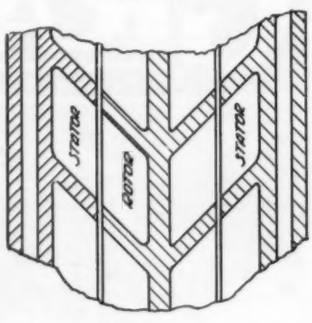


FIGURE 3
(SECTION X-X)

End view partly in section with section through vanes of Parkersburg hydromatic brake

water still has some velocity and the friction between the stator walls and the water dissipates more power. This is the second step in the power dissipation.

When the fluid reaches the hub of the rotor its remaining velocity carries it across the gap into the rotor pockets but in so doing it is cut by the vanes of the rotor pockets which set up a resistance to the rotation of the rotor. This is the third step in the dissipation of power.

It will be noted that while the fluid is in the pockets of the rotor energy is being imparted to it and that this energy is dissipated by the resistance while in the pockets of the stator.

As previously stated, energy can neither be created nor destroyed. Consequently all this energy is converted into heat, which raises the temperature of the fluid coursing through the brake. If this fluid were not replaced it would, with these enormous powers, soon be raised to its boiling point, which would make the brake inoperative. Consequently means have been provided to circulate the fluid from an outside cooling and storage tank.

When the brake is absorbing 2,000 horsepower, or 66,000,000 foot pounds per minute, 85,000 B.t.u. heat units are being generated per minute. This is sufficient to heat 850 pounds (102 gallons) of water per minute from 80° to 180° F.

In a drawworks application the load starts at practically nothing and builds up to a maximum of 200,000 pounds more or less. A 15-bbl. cooling tank is sufficient to circulate all the fluid required for this duty.

The accompanying table gives the capacity of the Parkersburg hydromatic brake applied to a drawworks.

Field Installations

After designing and building a unit at the Parkersburg, W. Va., plant and making many tests at an installation made there one of the hydromatic brakes was attached to a sand reel and given further test at a cable tool well. Other installations have since been made to sand reels and rotary drawworks. The actual results obtained at a well in the Gulf Coast area are given to demonstrate how closely the actual performance of the brake compared with its estimated capacity.

The Gulf Coast well while drilling at

FIGURE 2

Sectional view of Parkersburg hydromatic brake

a depth of 4,050 feet used 6-inch 29.9-pound pipe having a total weight of 120,892 pounds. The drill pipe was handled with eight live lines in the derrick making the line load 15,112 pounds. The average speed of lowering the pipe was 300 feet and of the line 2,400 feet per minute. The power developed was 1,099 horsepower and the average speed of the shaft was 330 r.p.m. The drum diameter was 18 inches. A 36-inch hydromatic brake was used.

Compared with the tests made at the Parkersburg plant where 455-horsepower was developed at 210 r.p.m., we get:

$$\frac{455 \times 330^2}{210^2} = 1{,}125 \text{ h.p.}$$

The theoretical capacity of the brake is 470 horsepower at 210 r.p.m. as calculated by the empirical formula:

$$.01065 \times 210^2 = 470 \text{ h.p.}$$

Upon this basis of estimate it follows that the actual capacity is within 3.2 per cent of the theoretical and this slight variation may be accounted for by manufacturing and casting tolerance, temperature of fluid, or some other factor; .01065 is a constant calculated by the engineering department of the Parkersburg Rig & Reel Co.

If heavier loads are to be handled the Parkersburg Rig & Reel Co. plans to manufacture this type of brake in larger sizes, or the customer can instruct the driller to take up the difference between the capacity of the hydromatic brake and the load with the mechanical brake.

To illustrate this point, if 6,300 feet of 6-inch 29.9-pound drill pipe is being lowered in 90-foot stands at the rate of one stand lowered in 15 seconds, 1,720 horsepower would be developed which would approximate 150 horsepower more than the capacity of the hydromatic brake 36-inch diameter. Consequently with this size brake only 9 per cent of the load would have to be absorbed by the mechanical brake.

While the fundamental principles followed in the design of this brake are not new and have been used in dynamometers for testing turbines and engines, its application to braking on equipment used in drilling holes is an innovation. When it is considered that a brake only 36 inches in diameter and occupying about 16 inches of shaft space will absorb this great amount of energy it is certainly a step in the right direction in solving the problems presented in brake design for oil well equipment.

The manufacturers do not claim that it should entirely supersede the mechanical brakes. No matter how reliable a single brake unit of this or any other type may be it cannot be used exclusively in drilling operations for it is essential that the driller have some mechanical device that he can handle through which he can get the "feel" of the line and judge for himself conditions in the hole at all times.

However, It has been so clearly demonstrated that this piece of equipment will function so satisfactorily that those who have seen it in operation predict great possibilities for the hydromatic brake and it has been termed an automatic governor and as such will serve the same general purpose on hoisting and lowering equipment as the governor does on the steam engine.

As the amount of resistance offered to the load can be varied it is possible to adjust the brake to all conditions encountered in drilling from the top to the bottom of even very deep wells. Two other important inherent advantages in this brake design are that it exerts its braking force in one direction only due to the slope of the vanes and has no appreciable resistance in the opposite direction, and there is absolutely nothing to wear out except the shaft bushings upon which the rotor turns.

The Parkersburg Rig & Reel Co.'s engineering department is ready to give additional detailed information about this piece of equipment upon request, and as many notable improvements and developments have been made in the fundamental design it has many applications.

The inventions developed in connection with this work are fully covered by United States and foreign patent applications allowed and pending.

Liquefied Gas Industry Awaits New Developments

(Continued from Page 54)

search agreed to undertake this study in a co-operative way. The project is being sponsored by a number of the larger manufacturers. Although the problem has always been considered an important one, it has proved to be far from a simple one. By combining our efforts and pooling our resources in the present Bureau of Mines investigation, it is hoped a satisfactory answer to this important problem will be forthcoming some time during the ensuing year. Your incoming committee will have the study of the information obtained in this co-operative investigation as one of its problems.

In addition to the work just reviewed, your committee has continued to act as an informal bureau of information on questions relating to liquefied gas problems. Most of this work is done in an unofficial way through the various offices of the member companies. This dispensing of useful, reliable information of a technical nature will continue to be one of the most important functions of the Liquefied Gas Committee of the Association.

T. P. BRESNAN DEAD

Thomas P. Bresnan, age 72 years, retired, former secretary to H. C. Dorworth and Henry McSweeney, attorneys for the South Penn Oil Co., died suddenly in Oil City on Friday, May 12. He had been connected with the company 35 years.

Hints of Practical Value

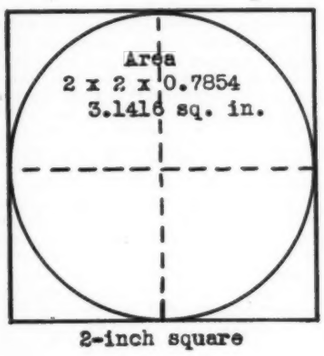
By L. G. E. BIGNELL
Petroleum Engineering Editor

Carrying Capacity of Copper Wire

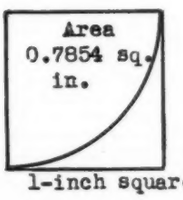
It frequently becomes necessary for a driller to string wire for a temporary lighting system around a rig. The selection of the proper size wire may be made by following these general rules.

In making electrical calculations the circular mil is used in expressing diameter and area of wires. This principle may be illustrated by making a general comparison with a pipe needed to deliver a certain quantity of liquid. The pipe size is estimated and the comparison of pipe sizes made by squaring the diameter, in inches, and multiplying the result by the standard decimal .7854. A circular inch is the area of a circle 1 inch in diameter and equals 0.7854 square inch. This is the area of a circle drawn inside of a square 1 inch on each side.

1-inch square



2-inch square



1-inch square.

If the diameter of a circle is increased to 2 inches instead of 1 inch, the area will be four times as great. This is illustrated by the sketches. Multiplying 0.7854 by 4 will give the area of the 2-inch circle. For a 3-inch diameter circle the area would equal $3\times3\times0.7854$ or the square of the diameter times 0.7854.

If a square 1 inch in area is inscribed with a quarter-circle from one adjacent corner to the other adjacent corner, the area inscribed by the compass will be 0.7854 square inch.

This illustration will form the basis for an explanation of the circular and square mil. The circular mil is the area of a circle 1 mil, or 0.001 inch in diameter. $1{,}000^2$ or 1,000,000 circular mils equals 1 circular inch.

The square mil is a square 1 mil long on each side. In calculating the size of wires for transmission of current the circular mil is generally used because it is then only necessary to multiply the diameter of a wire by itself to obtain its area in circular mils. If square mils were used it would be necessary to multiply by 0.7854.

The resistance of a conductor (wire) increases directly as its length and decreases directly as its diameter is increased. The resistance of a 1-mil-foot of soft copper wire at 68° F. is 10.371 international ohms. For ordinary drawn copper wire the value of 10.8 is commonly taken, corresponding to a conductivity of 97.2 per cent.

To determine the size of wire necessary to carry a certain current at a given number of volts loss, the following formula may be used:

$$\frac{\text{Feet of wire}\times10.8\times\text{amperes}}{\text{Volts lost}} = \text{circular mils.}$$

Or to determine the number of volts lost in a given length of wire of a certain size carrying a known number of amperes of current:

$$\frac{\text{Feet of wire}\times10.8\times\text{amperes}}{\text{Circular mils}} = \text{volts lost.}$$

Or to determine the number of amperes that a wire of given size and length will carry at a given number of volts loss:

$$\frac{\text{Circular mils}\times\text{volts lost}}{\text{Feet of wire}\times10.8} = \text{amperes}$$

When the area in circular mils has been determined by the above formula reference should be made to "Allowable Capacity of Wires" to see if the calculated size is sufficient to avoid overheating.

ALLOWABLE CARRYING CAPACITIES OF WIRES

Gauge No.	Diameter of solid wires in mils	Area in circular mils	Rubber insulation, amperes	Varnished cambric insulation, amperes	Other insulation, amperes
18	40.3	1,624	3		5
16	50.8	2,583	6		10
14	64.1	4,107	15	18	20
12	80.8	6,530	20	25	25
10	101.9	10,380	25	30	30
8	128.5	16,510	35	40	50
6	162.0	26,250	50	60	70
5	181.9	33,100	55	65	80
4	204.3	41,700	70	85	90
3	229.4	52,630	80	95	100
2	257.6	66,370	90	110	125
1	289.3	83,690	100	120	150
0	325	105,500	125	150	200
00	364.8	133,100	150	180	225
000	409.6	167,800	175	210	275
		200,000	200	240	300
0000	460	211,600	225	270	325
		250,000	250	300	350
		300,000	275	330	400
		350,000	300	360	450
		400,000	325	390	500
		500,000	400	480	600
		600,000	450	540	680
		700,000	500	600	760
		800,000	550	660	840
		900,000	600	720	920
		1,000,000	650	780	1,000
		1,100,000	690	830	1,080
		1,200,000	730	880	1,150
		1,300,000	770	920	1,220
		1,400,000	810	970	1,290
		1,500,000	850	1,020	1,360
		1,600,000	590	1,070	1,430
		1,700,000	930	1,120	1,490
		1,800,000	970	1,160	1,550
		1,900,000	1,010	1,210	1,610
		2,000,000	1,050	1,260	1,670

1 mil = 0.001 inch.

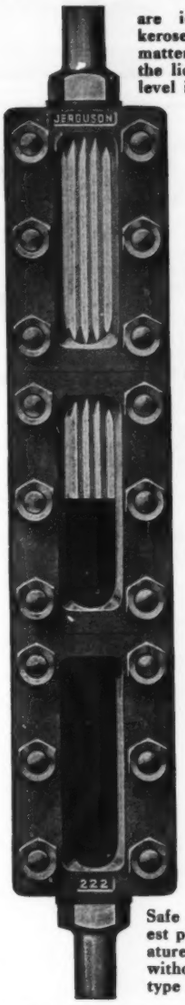
For aluminum wire the allowable carrying capacities shall be taken as 84 per cent of those given in the table for the respective sizes of copper wire with the same kind of covering.

Conductors of sizes Nos. 18 and 16 shall be used only for flexible cords and for fixture wires.

Conductors may be placed in multiple only by permission of authority enforcing this code.

Varnished cambric insulated wires smaller than No. 6 shall be used only by permission of the authority enforcing this code.

JERGUSON
REFLEX GAGES



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TECHNICAL QUESTIONS ANSWERED

By Charles K. Francis, Ph. D., Technical Editor

This department of The Oil and Gas Journal is devoted to the manufacturing branches of the oil industry.

Those connected with the refining of crude petroleum, the manufacture of natural gasoline and closely allied industries are invited to submit their problems to Dr. C. K. Francis, technical editor. The department was created for the purpose of aiding managers, superintendents, engineers, chemists and all those engaged in the various phases of plant operation; also those connected with marketing and utilization of petroleum products.

Questions should be submitted in as much detail as possible.

Inquiries must be signed but only the given initials will be printed. The source of the questions is considered to be confidential.

Questions requiring a dicussion of patents, the use of intricate formulas, extended computations, or cost estimates cannot be considered.

When the matter is of general interest the reply will be published within a reasonable time.

Determining Sulphur in Kerosene by Bomb and Lamp Methods

We should appreciate your advice as to whether one has a choice of either the bomb or lamp method when determining the percentage of total sulphur in kerosene?—A. L. N.

Numerous states, and other purchasing agencies, have modeled their specifications and the testing methods for petroleum products after those of the United States Government. When the method for the examination of a petroleum product is not mentioned in the contract it is the common practice to follow the one prescribed in the Federal publications. Most of the government methods are those that have been first thoroughly investigated and standardized by the American Society for Testing Materials through Committee D-2.

The A.S.T.M. method for determining sulphur by means of the bomb test is recommended for oils heavier than illuminating oil. The procedure prescribes oxidation of the oil by combustion in a calorimeter bomb containing oxygen under pressure. Under the conditions all of the sulphur contained in the oil is converted to sulphuric acid and this is finally weighed as barium sulphate. While this method has a high standing for accuracy, for the determination of sulphur in many compounds, it is not well adapted to the more volatile petroleum products; chiefly because of the special precautions that must be taken to prevent losses while weighing and the very small quantity that has to be used; also relatively large quantity of light oil when burned in the oxygen bomb is liable to cause an explosion. For these reasons the method is usually confined to the analysis of lubricating oils and other heavy petroleum products.

Since the combustion products of the light oils, kerosene, naphtha and gasoline, are especially objectionable when containing large quantities of sulphur, the lamp test is well adapted to the purpose. The material is burned in a small lamp under conditions where it is possible to use large quantities and the products of combustion are absorbed in a solution of sodium carbonate. The decrease in the alkalinity of the solution is proportional to quantity of sulphur contained in the sample.

The government specifications for the light oils covering the quantity of total sulphur refer to the lamp method. While the chemist may have an option as to which method he may follow, it seems that the usual practice of making use of the lamp method for the light oils is the preferred one. There can be no question that the lamp method is stipulated in the government specifications and in all cases where they have been adopted by others.

Comparison of Foster and Tag Flash Testers

A few states specify the Foster flash tester for use when examining illuminating oils or distillates. Can you advise how the Foster results compare with those obtained with the Tag closed tester?—P. R.

The Foster Flash Tester was in use for the testing of illuminating oils many years before any attempt was made to perfect and standardize instruments for the inspection of petroleum products. This instrument is now obsolete but is retained in petroleum laboratories because it is the legal apparatus required by the inspection laws of some states.

The Foster Automatic Closed Tester consists of an elliptical shaped shell containing a water-bath and an oil cup above a heating chamber, the oil cup being surmounted by a vapor chamber into which is set a thermometer and a flashing taper. The oil is heated by means of an alcohol lamp at the rate of 2° a minute. The flashing taper is ignited when the temperature of the oil is 100° F. and as soon as the oil reaches the flashpoint the flame of this taper will be extinguished; the temperature at this instant is the flashpoint.

The Tag Closed Tester consists of a cylindrical body, the heating chamber, above which there is a water-bath and a covered oil cup. There are two thermometers, one for the oil and the other for the water-bath. The cover is fitted with a slide, which moves over a small opening, connected with a small pilot light; both are operated at the same time by means of a knob. The testing is started when the temperature of the oil is at least 20° F. below the probable flashpoint, the rate of heating must be between 1.6° F. and 2° F. per minute, by turning the knob so as to introduce the test flame into the cup and then turn it back again. The flashpoint is the temperature when the first slight explosion takes place.

The advantage of the Tag Tester is that it is more widely used as the official instrument by many states and the United States Government, also, both instrument and the method have been standardized in detail by the American Society for Testing Materials.

The Foster Closed Tester gives somewhat higher results on the same oil when tested by the Tag and other closed instruments. Day's Handbook of the Petroleum Industry, page 624, Vol. 1, gives a table showing flash tests of the same material by different instruments. The following is from this table.

FLASH TESTS OF LIGHT PRODUCTS BY DIFFERENT INSTRUMENTS. TEMPERATURE °F.

	Closed cup instruments—				Cleveland open cup
Material—	Abel	Tag	Elliott	Pensky-Martens	
Naphtha	86	92	92	95	100
Naphtha	94	103	93	105	115
Kerosene	127	130	128	135	140
Petrolite	142	139	140	150	155

When the flashpoint is very important or when the barometer reading varies more than one-half inch (13 mm.) from the standard pressure of 29.92 inch (760 mm.), a correction should be made. When the barometer is below 760 mm., add to the observed temperature 1.6° F. for each inch (25 mm.) of barometer difference to obtain the true flashpoint. When it is above, deduct 1.6° for each inch of barometer difference.

Copper Dish Method and Other Tests for Determining Gum

It has been suggested that the copper dish method for determining gum in gasoline and distillates, which is used in our laboratory as a control test, should be discarded because it cannot be relied upon to give accurate results. Would you mind giving me your opinion on this?—R. A.

There are several objections that are commonly made to the copper dish method for the determination of gum in gasoline, but these are presented by petroleum chemists and have special reference to the determination of gum as required for research and reference purposes. It is necessary to remember that the standard methods are devised with the object that they shall serve in cases of dispute or when the most accurate results obtainable are required. Many plant laboratories take advantage of short-cut methods for control purposes and while such tests may not give the same degree of accuracy obtainable by the standard method, the information is adequate for plant operations.

The important advantage of the copper dish method is that only simple and inexpensive apparatus is required and that a highly trained analyst is not necessary. The test methods that have been suggested to replace the copper dish method differentiate between the forms of gum. The air-jet and steam-oven methods are recommended for the determination of preformed gum, the gum present in the sample at the time the analysis is made, and the oxygen bomb (accelerated test) method is used for the purpose of obtaining an indication of the quantity of potential gum, or the total gum content that may be expected after the gasoline has been standing in storage. The copper dish test may not always give weights as high as those obtained by the accelerated test but they are usually higher than the residues found by either of the methods for preformed gum.

Numerous laboratories claim that a product passing the copper dish test specifications of from 3 to 30 milligrams will in most instances either meet or be under the quantities specified for the other methods. Certainly, when the copper dish procedure is followed day after day in a plant laboratory, there should be no difficulty in making safe interpretations of the data obtained to serve for the proper adjustment of operating conditions.

Since the formation of gum in a gasoline is thought to result from action of the air, accelerated through the influence of sunlight, it may be expected under the exposure conditions of the copper dish test that duplicate determinations will not agree to the extent comparable with those obtained in many analytical methods. However, as above indicated, the method may be safely applied for plant control purposes.

There was a discussion of the use of the copper dish method as compared with other methods, by Murphy and Wirth, III. in The Oil and Gas Journal, March 23, 1933, page 24.

Aromatics in Straight-run and Cracked Gasoline

Is anything definite known covering the percentage of aromatic compounds found in gasoline? I understand that some straight run gasoline contains a high percentage but the cracked gasoline usually more. Have any of the aromatic compounds been separated and identified?—A. T. G.

Aromatic compounds are found in most petroleums but the quantity naturally occurring is usually small, frequently no more than a trace. There are, however, a few oils that contain exceptional quantities. Examples of these are certain oils produced in Rumania, Java and Borneo. The gasoline derived from Java oil contains 19 per cent aromatics and a Rumanian oil is reported to have contained 24 per cent. The straightrun gasoline from the various crude oils of the United States has been found to contain aromatic compounds ranging from a trace to about the same percentage as that found in some of the foreign oils that are especially noted for their high percentage of aromatics.

AROMATICS IN GASOLINE MADE FROM REPRESENTATIVE PETROLEUMS

	Total aromatics, %: Straight-run gaso.	Cracked gasoline
Oil refined—		
Pennsylvania	trace	23.1
Pennsylvania	6.9	29.3
Mid-Continent	3.9	18.5
California	10.4	10.8
California	18.9	29.0
Kentucky	5.3	14.9
Smackover, Ark. (heavy)		28.5

The tabulated results are from the several articles by Doctors Egloff and Morrell, which have appeared in The Oil and Gas Journal and publications of the Universal Oil Products Co.

Several aromatic hydrocarbons have been identified in the distillates from petroleum, including those formed at high temperatures and pressures in the cracking process, as listed in the table:

AROMATIC HYDROCARBONS FROM PETROLEUM

Aromatics—	Sp. gr. at 60° F.	B.P. at sea-level, °F.
Benzene	0.8819	176
Toluene	.8689	230
Ethyl benzene	.8729	275
Xylene-p	.8698	279
Xylene-m	.8689	282
Xylene-o	.8829	288
Propyl benzene	.8664	317
Mesitylene	.8654	318
Pseudocumene	.8819	327

The aromatic compounds have an important bearing on the antiknock properties of gasoline, so the refiner adjusts the refining operations, especially the cracking conditions, to form these compounds from the paraffin hydrocarbons, the majority of which cause the gasoline to knock when used for motor fuel. The straightrun gasolines that do not knock are comparatively scarce but the modern cracking process enables the refiner to obtain a product which is blended with the straightrun gasoline to make the high antiknock fuel now demanded by the consumer.

FIELD PROBLEMS FROM READERS

Edited by Thomas F. Smiley

This department is conducted in order that men connected with the drilling, producing or transporting branches of the petroleum industry may obtain aid in solving problems that confront them in their work. Readers are invited to send questions freely. These questions will be placed in the hands of persons capable of answering them authoritatively, and the answers, based on the best available information, will be published.

Each question should give as much detail as possible, especially if it involves depth of sands, types of sands and operations on adjoining or nearby properties. The source of questions will be considered confidential, and only the initials of the sender will be published. Questions involving patented processes, intricate formulas or estimates of cost cannot be answered. If an immediate answer is important, one will be given by mail when the writer requests it.

In this connection, The Oil and Gas Journal will be glad to publish articles from field men who have devised new methods or improved old ones.

Origin of Oil Field Water Which Causes Trouble for Producer

So much is published regarding troubles caused by water in oil fields that I want to ask a question about this subject. I would like to have you tell me how the water happens to be in the formations where they find it and just why it makes trouble for the oil producer.—S. G. D.

The subject of underground waters as sources of trouble for the oil producer is discussed as follows by Dorsey Hager in his work on "Practical Oil Geology":

"There are two main sources of water in all oil fields, water confined in the oil-bearing strata and water occurring separate from the oil zones. In the first case water is sealed in the oil sand and normally underlies the oil and gas. It may be sulphur water or salt water, in fact may contain many minerals. Originally it was meteoric or rain water that percolated through the earth until it reached the oil strata, where it was sealed or held in by the shaly or clayey beds which generally are found above and below the oil sands. In some cases, however, this water is the sea water which penetrated the shales and sands before folding occurred. The water is generally under rock or gas pressure, and as it is already in the oil zone, there is no way of eliminating it as a source of trouble.

"However, where there are two or more oil zones and only one is troubled with water, there may be great economy in shutting off one of the troublesome zones. On the whole water confined to the oil zone is less dangerous to the industry than water occurring in other than the oil zone. It may occur above, below or between the oil strata. Generally under head and occurring in large quantity, it becomes a source of great danger to an oil field when it enters the oil zones. Indeed it is the water most to be feared and to be guarded against. Obviously such water enters the oil zones only as the result of artificial or man-made causes, as the oil zones and the water-bearing strata are separate and distinct. Earthquakes or volcanic upheavals may cause faulting and shattering of the formations to such an extent that water enters the oil zones from the separate water sands, but for all practical purposes the latter causes will not be considered.

"Primary water (water originally confined in the oil zone), as before mentioned, lies at the bottom of the oil sand under pressure. As the gas and oil are withdrawn from the sand the water rises to replace them. In time nearly all the oil is drawn from the sand and only the water is left. The field must then be abandoned. This is the result of natural exhaustion and is expected in every field.

"Where there is only one oil zone little avoidable danger or trouble occurs. Assuming, however, two strata, as commonly is the case, water will rise from the lower stratum into the upper stratum unless proper precautions are taken to avoid this condition. Where the gas pressure is strong the water in the lower stratum will be driven into the upper one. Especially is this true when the lower zone becomes all or nearly all water. By properly confining the water to the bottom zone water troubles would be averted for a time.

"Secondary water (water occurring in strata separate from the oil zones and entering the oil zones from artificial causes) enters the oil zones from four causes: (1) Accidents to the casing used in shutting off the water sand; (2) faulty cementing of the water sand; (3) cave-ins due to the withdrawal of a large quantity of sand from the oil stratum, thus allowing water to enter the oil zone from above, and (4) where no effort has been made to shut off the water formation, especially in prospect holes.

"Accidents to the casing that shuts off the water may result from the dropping of sharp-pointed tools, bailers or sand pumps into the hole or from falling tubing. The casing may be corroded by the action of the minerals in the water and later collapse. The eroding action of sand in a flowing well is often sufficient to cut the casing. Sometimes the casing is defective or is not put together properly. Again the sudden shifting of the sands in the oil zones may cause the casing to pull apart or break at the water string. Accidents to the cement may result from the causes as enumerated above without, however, affecting the casing to any marked degree. Cave-ins around the casing are of common occurrence in the California fields."

Part Played by the Compressor Station on Long Gas Lines

I want to submit a question which is pretty rudimentary. I am not clear as to the function of compressor stations along big gas lines. What is it that is compressed, the gas itself? Or is compressed air used in some way to aid in the movement of the gas? Will not gas move through a long line without any pressure being applied to it so long as the line is kept full of gas by introducing a fresh supply at one end as fast as it is removed from the other? What power is used to drive the compressors in these stations?—N. A. T.

The following in answer to your questions is taken from a paper by L. G. E. Bignell, petroleum engineering editor, on "Suggestions for the Maintenance and Operation of Modern Gas Compressor Stations":

Long distance transportation of natural gas does not necessarily involve higher pressures, but higher pressures constitute an important factor in the economics of long pipe lines. By some persons not familiar with the gas industry it has been assumed that compressing natural gas consisted of "pumping" air into a gas line. This is not the case. The modern compressor station consists of a steam, motor or gas-driven compressor, with all necessary cooling systems and appurtenances, for taking gas from the field or incoming gas lines, at a low or natural pressure, compressing and delivering it at a higher pressure to outgoing lines, in order to overcome the friction in the line en route to the next compressing station or to the market.

The gas is compressed because it is necessary to deliver it at points some distance from the well and much beyond the limits to which it would flow by the "natrual" or "rock pressure" at which it is produced at the well. The gas as it comes from its underground reservoir is compressed to some extent and would flow through a pipe line until friction and use of the energy stored within the compressed gas has been expended and the gas had expanded to approximately atmospheric pressure.

It is therefore general practice to install compressor stations along the pipe line system and these compressors are driven by steam or gas engines or by electric motors. If electric motors are used it is necessary to select the alternating current induction type to avoid the presence of sparks that would be the case if direct current commutator motors were used. The compressors may be driven by belt or rope drives or direct connected and recent practice is largely confined to the direct connected gas engine type outfits.

Why Was It Called That?

ARTESIAN WELL

An artesian well is a well bored down to a point, usually at great depth, where the water pressure, owing to the conformation of the strata, is so powerful as to force the water to the surface causing it to flow spontaneously, like a fountain. It is so called because the general knowledge of such wells was derived from those in Artois, a province in France and anciently called Artesium, where they first were made about 1750. The name has come to be applied loosely to any deep bored well, even where pumping is necessary, as in an ordinary driven well.

Creep Test and Method by Which It Is Applied to Metals

In a discussion of metals used in the manufacture of oil refinery equipment there is a reference to the "creep test," which as I understand it is made in the laboratory. May I ask you to explain what the creep test is? The "short time" test is mentioned, too. I would appreciate an explanation of that.—D. S. F.

Two important properties of steels used in refinery service are their strength at high temperatures and their stability after long exposures to high temperatures. Engineers have developed two methods of testing metals in the laboratory to appraise the value of various alloys under stress at high temperatures. These are the so-called short-time, high-temperature tests and the long-time flow, or creep-tests.

The short-time tests are carried out by heating the specimen to the desired temperature while it is held in the grips of the standard tensile testing machine, and then applying rapidly increasing loads until failure occurs, exactly as ordinary tensile testing is carried out at room temperature on all materials. In these short-time tests the rate of loading is rapid and the rate of elongation is also rapid, the testing time usually not exceeding two minutes. Under these conditions a rate of elongation as high as 50 per cent in 2 inches is carried out in a short time. The tensile strengths recorded show gradually decreasing values as the temperature is increased, but are always much higher than the loads which will produce flow in creep testing.

Tensile strengths so determined give an indication of the stress which metals will sustain for short periods without failure when rapidly overloaded and also the approximate stresses which occur when apparatus is subjected to local overheating or overloading. Short-time tests are useful, therefore, as a qualitative indication of the relative strengths of various materials but give no idea of the load which a metal section can sustain at elevated temperatures for periods of 5,000 to 100,000 hours.

Creep testing procedure is much different from short-time testing, as the general practice in creep testing is to heat the specimen to a definite temperature and apply a definite and constant load. Under these fixed conditions the rate of elongation is measured at regular intervals and tests are extended to periods up to 100,000 hours. It has been found that, under static loads, metals flow at stresses which are far below the corresponding short-time strength at similar temperatures. This phenomenon of the creep of metals has given designing engineers difficulty, as the stresses which can be applied in service for long periods must be low. Since creep tests results are dependent upon time, temperature and stress, it is necessary to specify a creep stress as that which will produce a certain flow in a definite time. Usually the load which will produce less than 1 per cent elongation in 10,000 to 100,000 hours at any given temperature is designated as the creep stress, or limiting creep stress, it being inferred that, under this load, the metal will remain rigid for an indefinite period. Engineers in the United States have preferred to discuss creep strengths only when referring to tests lasting at least 5,000 hours, in order that the time element, which is vital, may be accurately evaluated.

NATURAL GAS DEVELOPMENTS

Many Proposed Gas Lines Now Under Consideration

Among proposed natural gas lines now under consideration are projects of the Natural Gas Pipe Line Co. of America for 145 miles from Geneseo compressor station to the Illinois-Wisconsin line and to Clinton, Iowa, and 50 miles to Dubuque. The first named would be 16-inch. An 8 or 10-inch line is also projected to Galesburg, 30 miles. Other projects of this company are an 80-mile extension of 8-inch from the Texas-Chicago line to Waterloo, Iowa, a 75-mile extension to Fort Madison, Burlington and Keokuk, a 100-mile line extension to Ottuma, Fairfield, Centerville and Albia, a 40-mile line to Cedar Rapids, and a 15-mile line to Chariton, Iowa.

Natural Gas Pipe Line Co. of America is also having market survey made on a 40-mile line from the Illinois-Wisconsin line to Milwaukee, and a 60-mile extension to Madison. It further contemplates a 100-mile line from Milwaukee to Green Lake, Sheboygan, Fond du Lac, Oshkosh and Green Bay.

Northern Gas & Pipe Line Co. has under consideration a 175-mile line from Sioux Falls, S. Dak., to the Rochester, Minn., branch.

Montana Power & Gas Co. is reported to have two projects, each of 80 miles, one from the Cut Bank line to Missoula, Mont., and a connecting line between northern and southern systems.

The Rom-Ed Natural Gas Co. is reported planning a 25-mile line from the Armells Field to Lewistown, Mont.

The Southern Union Gas Co. is credited with a plan to extend its Santa Fe line to Las Vegas, N. Mex., 65 miles of 8-inch.

United Gas Public Service Co. proposes a line from the Van Field to Mineola, Tex., about 12 miles of 10-inch.

Standard Gas Co. is figuring on a 25-mile line of 8-inch from Dickson County fields to Nashville, Tenn.

Northwestern Natural Gas Co., which just completed a $250,000 extension in Washington State, plans a 50-mile line of 8 and 6-inch from Benton County to Pasco, Kennewick and Walla Walla.

In Wyoming the Rocky Mountain Gas Co. proposes a 22-mile 8-inch line from Allen Lake to the Dutton Creek-Laramie line.

In addition there is the proposed 120-mile line of 8-inch from the Hobbs Field, New Mexico, to Lubbock, Tex., credited to the J. W. Moore Construction Co. and the project of the Gas Fuel Service Co. in California to build a 400 mile line of small pipe to deliver gas for pumping and power purposes from the Dudley Ridge Field to San Joaquin Valley district. Also the Western Gas Co.'s plan to extend its 10-inch line from Douglas, Ariz., 216 miles to Tombstone, Tucson and Phoenix.

NEW MEXICO UTILITY TAX

Chairman J. D. Lamb of the New Mexico State Corporation Commission, asked the state legislature to place all public utilities under the jurisdiction of the commission so that it can levy an annual license fee from gas plants, electric plants and water works. The fee for gas plants would be: Albuquerque $500, Santa Fe Springs, $500, Roswell $500, Clovis $300 and Carlsbad $200.

UTILITY RATE CUT DEFEATED

LOS ANGELES, Calif., May 13.—The California assembly has defeated the proposal to direct the California Railroad Commission to proceed to institute 20 per cent discount on electric and gas bills for a period of one year.

Coal Industry Pushing Research to Meet Natural Gas and Oil Competition

PITTSBURGH, Pa., May 15.—The coal industry has lost an estimated annual production of 125,000,000 tons to the competition of oil and gas—and the coal industry proposes to get back that production.

That was the keynote of an address here by B. R. Gebhart, director of public relations of the Illinois Coal Bureau, before the tenth annual coal convention of the American Mining Congress.

From 1913 to 1931, coal dropped from 84.3 to 56.5 per cent of the total energy production in the United States, he declared, while natural gas increased its proportion from 3.5 to 8.6 per cent, and petroleum climbed from 8.9 to 26.4 per cent.

Extensive researches into the development of burners and their application to gas and oil, said Mr. Gebhart, have placed the coal industry at a 10-year disadvantage. As a result of this development, aided and stimulated by oil and gas producing interests, he declared that oil and gas has been successful in securing "higher prices per 1,000,000 B.t.u. for their fuel than the coal people, and yet have made and are continuing to make tremendous gains in the energy market."

Illinois coal producers, he said, discovered some years ago that something had to be done about the threatened loss of industrial business to natural gas. Finding that approximately two-thirds of the delivered cost of their coal was freight, they next gained the co-operation of railroads in securing freight rate reductions at points where natural gas competition existed, and, he added, now look forward to reductions at points where competition is impending.

Combustion engineers were then sent to various "threatened" plants, to devise ways of improving the method of coal application. As an example, he cited the city light plant at Rochester, Minn., where stoker and other plant adjustments accomplished an increase in actual evaporation of 1.25 pounds per pound of coal burned, which was equivalent to a reduction in the delivered coal price of approximately 50 cents per ton."

The stoker, in both domestic and industrial sizes, declared Mr. Gebhart, offers an effective weapon to the coal man. It permits the retail coal merchant to offer a degree of heat service which is "somewhat comparable with the fully automatic service provided by gas and oil. Stoker hoppers still have to be filled with fuel, and ash receptacles removed, but these services are being performed for a fee by coal merchants in many cities." Some fully automatic domestic stokers for anthracite, he declared, are now on the market— which fill their feed hoppers from a main storage hopper and dispose of their own ashes.

He quoted U. S. Bureau of Mines figures to show that the installation of smaller stokers has increased "rather promisingly" in the last few years. For 1931 and 1932, 55 establishments reported installing approximately 22,000 stoker units. The total number of installations reported to the bureau up to February, 1933, was 33,541.

"While this by no means represents all installations," declared Mr. Gebhart, "it does show some progress in the face of the more than 700,000 oil burners now in operation."

The newest and biggest problem in the coal industry, he declared, is washing and cleaning coal. "Whether it results in packaging coal at the mine, selling it on a guaranteed therm basis, or whether coal eventually shall be pulverized or gasified at the mine and transported to market through the pipe lines which we may inherit from the natural gas speculators," he concluded, "the problem must be settled. The laboratory must be called into partnership with the coal business if we are to deserve a profit for taking advantage of the rich heritage of coal resources with which nature endowed this country."

Approximately 3,500 delegates attended the convention.

Los Angeles Gas Reduction Upheld in Supreme Court

WASHINGTON, D. C., May 15.—The U. S. Supreme Court has upheld order of the Railroad Commission of California in 1930, fixing rates on gas to be charged by the Los Angeles Gas & Electric Corp. The decision, by Chief Justice Hughes, affirmed the lower court ruling, and rejected the company's claim that the valuation order of the commission in this connection constituted confiscation of its property, due to failure to allow for certain intangibles. Chief Justice Hughes said these items were too conjectural to warrant consideration.

The commission fixed new rates equal to a return of 7.7 per cent on the historical value of the corporation of $60,704,000 and 7 per cent on the valuation for 1930 of $65,500,000. The decision sustained the fairness of this valuation.

The lower court continued an interlocutory injunction against the order pending final disposal of the case by the U. S. Supreme Court. The highest court reached its decision after recapitulating a series of important valuation cases which it had previously decided.

The Los Angeles Gas Co. has continued to collect the existing rates and now has on hand a sum of over $2,500,000, representing the difference between the existing rates and the reduced rates prescribed by the commission.

The company contended that the order reduced rates which had been prescribed as just and reasonable by the commission two years before by 9 per cent. This operated to reduce gross revenue by $1,300,000 a year and net revenue by $1,080,000. The company sought an injunction against the rate reduction order on the grounds that it was arbitrary and the rates confiscatory.

The company charged that $9,228,687 representing going value of the property was not included in the rate base. The rate of 7 per cent, the company contended, compared with 8 per cent return enjoyed by comparable investments in the same locality.

The decision held that no definite valuation formulas could be laid down by the courts but that a reasonable judgment must be arrived at by the authorities based upon relevant facts. The duty of the courts, it was said, was to review the results.

Justices Butler and Sutherland dissented.

Further Expansions for United Gas Corp. in 1933

United Gas Corp. and subsidiaries for the year ended December 31, 1932, report total operating revenues of $23,091,454, compared with $25,005,303. Net operating revenue after expenses and taxes was $12,143,878, against $14,206,449 and gross income was $12,317,955 against $14,462,387.

Due to changes during 1932 United Gas Corp. is carrying its investment in Consolidated Gas Utilities Co., now in receivership, at $1 on its books.

The report states that due to the decline in earnings and to the inability to finance capital and other requirements of subsidiaries, the amount of cash available for the payment of dividends has been materially reduced. It further stated that further expansions are necessary; that $3,500,000 was spent in 1932 and that $2,325,000 has been authorized for 1933.

Natural gas produced and purchased during 1932 was 164,417,905,000 feet, compared with 176,419,079,000 feet during 1931. Natural gas sold during 1932 was 148,636,212,000 feet, compared with 154,719,835,000 feet during 1931. The report states that a substantial portion of the gas is delivered to industrial and other customers within a comparatively few miles of the sources of supply and approximately 50 per cent of the gas sold is transported by the system less than 100 miles, while only 5 per cent of the total is transported in excess of 200 miles, and no major market is more than 250 miles from a source of supply. Gas is made available to several of the major markets from two or more sources through separate but interconnected pipe lines.

TEXOLA RATE REVISION

Gas rates of the McLean Gas Co. of Texola, Okla., were reduced substantially under a compromise agreement reached between the company and the city and approved by the Oklahoma Corporation Commission. The rate will be cut from $1 for the first 1,000 feet and 60 cents thereafter to 50 cents for the first 500 feet and 50 cents per 1,000 thereafter with a 3 per cent penalty for delinquency in payment of bills.

GALVESTON EXTENSION

GALVESTON, Tex., May 15.—A $50,000 construction program here was announced by Henry C. Morris of Dallas, president of the Texas Cities Gas Co., involving a new main on Avenue O from Twenty-third to Third Street, and extension of the distribution west of Fifty-seventh and south of Avenue S, and on East Beach to supply camps and resorts.

SASKATCHEWAN LINE REVIVAL

Revival of plans for laying a natural gas line from the Bowdoin Field in northeastern Montana to Regina and Moose Jaw, Saskatchewan, 176 miles, is reported. Thomas McManus of Chicago is said to have taken over the plans abandoned by the Power Corp. of Canada and to have begun negotiations for franchises in Regina and Moose Jaw. The program is reported to involve an expenditure of $3,500,000 in developing a supply of gas and building gathering lines. Another $450,000, or more, would be spent in laying the transmission line, erecting compressor stations and distribution systems in Regina and Moose Jaw.

CANADIAN GAS PRODUCTION

CHATHAM, Ontario, May 13.—Official figures just issued at Ottawa show that the natural gas production for all Canadian fields in March totaled 2,497,762,000 feet.

PERSONAL PARAGRAPHS

J. E. Madden, formerly of Tulsa, when he operated in Oklahoma and Texas, is now residing at Lexington, Kentucky.

* * *

Frank D. Pillatt, chief engineer for the Gulf Refining Company, accompanied by Mrs. Pillatt, have returned from Europe.

* * *

Herman Stabler, chief of the conservation branch of the U. S. Geological Survey, has been visiting in Oklahoma, on his annual inspection tour.

* * *

H. J. Galamba and W. C. Berry of the Sonken-Galamba Corporation of Kansas City, Kansas, have been spending the past week in East Texas.

* * *

F. R. Nicholson, superintendent of production for the Continental Oil Company, in the Hobbs, New Mexico, field, has been transferred to Wink, Texas.

* * *

R. A. (Pinky) Reed, veteran driller in the Glenn Pool area, was a recent visitor in Tulsa. He is operating a stripper lease in Elk County, southern Kansas.

* * *

C. E. Allen, southwestern district manager of the Westinghouse Electric & Manufacturing Company, has been making a tour of the Mid-Continent area on business.

* * *

Harold M. Smith, research chemist at the Bartlesville, Oklahoma, experiment station, Bureau of Mines, addressed the A. C. S. at Joplin on the work of the station.

* * *

H. W. Klein, general superintendent, and George Bays, chief engineer, both of Tulsa, with the Stanolind Oil and Gas Company, spent the past week in the East Texas Field.

* * *

G. V. Swearinger of Port Arthur, Texas, still superintendent for the Texas Corporation, has been in Casper, Wyoming, on an inspection trip of refinery stills at the company's plant there.

* * *

George O. Moody, vice president in charge of production for Mid-Continent Petroleum Corporation, has been made a director. He previously was a director of Cosden Oil and Gas Company and Cosden Pipe Line Company.

* * *

John D. Rockefeller has left his winter home in Florida for Lakewood, N. J. This year's winter sojourn kept Mr. Rockefeller in Florida 10 days longer than ever before. He said he felt fine and looked to be in good health.

* * *

M. T. Rathvon of Casper, general superintendent of the Argo Oil Company, has left Casper to join Mrs. Rathvon, who has been spending several months in Arizona on account of illness. From Denver they left to inspect company properties in Oklahoma and eastern Wyoming.

* * *

William Shannon has been appointed manager of the Tropical Oil Company of Colombia, subsidiary of the Imperial Oil Co. of Canada. Mr. Shannon was formerly associate professor of petroleum engineering at the Colorado School of Mines at Golden, Colorado. He has been in Colombia for the past five years. He is a brother of R. S. Shannon, general superintendent of production for the Continental Oil Company.

* * *

W. L. Connelly of Tulsa, chairman of the board of the Sinclair Prairie Oil Company, visited Casper, Wyoming, on his way home from the Pacific Coast where he spent some time with Mrs. Connelly who has been spending the winter in California because of illness. Mr. Connelly was met in Casper by O. E. Daugherty, Gregg Sawyer and C. H. Rutherford of Bairoil, Wyoming, and the party made a visit to the Salt Creek Field.

Allan Bruyere, division geologist for The Texas Company, addressed the Fort Worth Geological Society on May 15 on "Experiences of a Petroleum Geologist in Old Mexico."

Men of the Industry

S. W. EMERY

S. W. Emery, division superintendent for the Carter Oil Company, was born in the village of Milton, Iowa, and his boyhood was spent on farms of Iowa and Missouri. When about 20 he worked two years as a miner in Southwest Missouri. Then came jobs on the Southern Pacific Railway and in a men's furnishing store in San Francisco, Calif. Service with the American troops in the Philippines followed, and here he learned telegraphy, with the result that on being mustered out he got a job as telegraph operator in Emerald, Calif., with the Pacific Coast Oil Company, now Standard of California.

In 1907 Mr. Emery entered the employ of the Prairie Oil & Gas Company, in Neodesha, Kans., as an assistant engineer. He remained with the Prairie till 1912, during which time he served as superintendent's clerk for "Big Ed" Stewart in Nowata, Okla. In that year he resigned and developed some shallow production of his own in the Nowata Field. At the same time he purchased a drilling outfit and did contracting. In 1914 he laid a 6-inch pipe line from Drumright to Alluwe and installed two pump stations for the Millikin Refining Company.

Mr. Emery then went with the Carter Oil Company as district foreman and later division superintendent, which position he held until May, 1921, when he went to the Dutch East Indies, as general manager of the Dutch Colonial Petroleum Company. He managed operations along the East Coast of Borneo, on the Island of Java and in Sumatra. In addition to developing production in Sumatra, he built a small refinery in Java and a larger one near Palembong in Sumatra.

In 1924 Mr. Emery went back to the Carter Oil Company as division superintendent, located in Ponca City, Okla. In 1927 he was transferred to Duncan, taking over the southern division. In 1932 a reorganization caused him to move to Shawnee, Okla., as division superintendent of what is now called the central division. This includes the Greater Seminole and Oklahoma City Fields.

Ken Knowles of the Forest Oil Corporation, Bradford, Pennsylvania, has just completed a trip through the East Texas Field.

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A. S. Donley, general production superintendent of the Kansas-Oklahoma division of The Texas Company, is ill with spring influenza.

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Dr. G. H. C. Goetz, of the German Vacuum Oil Company, Hamburg, Germany, has sailed for that city, after visiting headquarters, New York.

* * *

Mr. and Mrs. F. W. Sewell of Hobbs. New Mexico, recently visited friends in Casper. Mr. Sewell is cashier for the Ohio Oil Company at Hobbs.

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Dale Nix, petroleum engineer for The California Company, Iraan, Texas, in the Yates Field, Pecos County, has been sent to Persia by his company.

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E. E. Smith, district manager for the National Tube Company, Tulsa, made a business trip through the Oklahoma City and Seminole Fields last week.

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Elmer Heck, formerly in the land department of the Prairie Oil and Gas Company, is now in the land department of Seaboard Oil and Gas Company at Dallas, Texas.

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John Alcorn, formerly vice president of Marland Oil Company, has joined the Wirt Franklin Petroleum Corporation, at Ardmore, and Oklahoma City, Okla., as comptroller.

* * *

L. E. Doan has returned to San Francisco to become general manager of North American Oil Consolidated Company, after engaging as an independent in north Louisiana for several years.

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Frank Champion, general sales manager, oil tool division, Byron Jackson Company, is on a tour of the Mid-Continent, Gulf Coast and Eastern oil provinces before returning to Los Angeles.

* * *

Thomas White, independent operator, has established his headquarters at Wichita Falls, after being at Dallas for some time. A. M. Fosdick is his manager for north Texas and south Oklahoma.

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C. D. Carney, since October 19, 1929, deputy field umpire under Ray M. Collins, and stationed in the Seminole Field, has returned to the service of Sinclair-Prairie Pipe Line Company as district gauger at Cleveland.

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E. L. Davenport, formerly in charge of the Shell Petroleum Corporation's production department in East Texas, is spending several months touring Europe and visiting The Hague. Mrs. Davenport accompanied him.

* * *

George C. Henderson, consulting geologist of San Angelo, Texas, addressed the West Texas Geological Society at its monthly meeting in San Angelo on "A Mineralogical Differentiation of some Central and West Texas Sediments."

* * *

John Hancock, Fort Worth, Texas, general counsel for the Texas Pacific Coal and Oil Co., was elected executive vice president and chief officer during the absence of Edgar J. Marston, president, who is ill in Colorado Springs. Mr. Hancock has been affiliated with the company since 1919.

* * *

Edward H. Chandler of Tulsa, counsel for the Sinclair-Prairie interests, has been elected a director of the National Bank of Tulsa. Mr. Chandler was born in Independence, Kansas, attended public schools there and received his degree in law from the University of Michigan. He and Thomas E. Wagstaff maintained a law office in Independence until 1913, when Mr. Chandler joined H. F. Sinclair as counsel in Tulsa.

NEW AND IMPROVED EQUIPMENT

Compensated Combustion Control System Perfected

The Neilan Co., Ltd. (division of Mason Regulator Co.), manufacturer of automatic control and regulating equipment, announces a newly perfected compensated combustion control system, which consists of two parts. The upper instrument is a compensated boiler pressure controller, while the lower and

larger is the compensated draft controller.

The system, which is suitable for oil-fired, stoker-fired or pulverized coal installations, functions so as to make boiler control entirely automatic. It controls the supply of fuel, regulates the speed and position of dampers or blowers or combinations of the two, so as to insure perfect combustion at all times.

The system is placed on a panel board with a special manual control feature which permits either of the two instruments to be thrown out at will and the boiler controlled manually. Advantages named by the manufacturer include savings in fuel and the elimination of smoke. The system utilizes compressed air as an operating medium and for this reason the panel board may be removed from the boiler room to a centralized control room when desired. Details may be obtained by writing to the Mason Regulator Co., 1190 Adams Street., Boston, Mass., or the Neilan Co., Ltd., 641 Santa Fe Avenue, Los Angeles, Calif.

Oil Center Tool Enters Its New Office Building

The Oil Center Tool Co. entertained approximately 200 oil company and equipment men Thursday evening, May 4, with a barbecue at the opening of the new Oil Center Tool Co. office building, 924 Adele Street, Houston, Tex., the site of the company's headquarter shops.

The recent expansion undergone by the Oil Center Tool Co. represents another step in the growth of the concern from a small tool shop five years ago to one of the leaders in the manufacture of high grade oil country specialties in the Gulf Coast territory.

The Superior Engine Co., Springfield, Ohio, has issued Bulletin 128 dealing with certain sizes and types of Superior Diesel engines.

Notes About Trade Literature

A detailed description, with illustrations, of the Emsco-Falk 160 MGP geared power for pumping a group of wells, is contained in an eight-page bulletin which may be obtained by writing to the Continental Supply Co., 1501 Locust Street, St. Louis, Mo.

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The Foxboro Co., Foxboro, Mass., has prepared an eight-page bulletin discussing Rotax, an electrically operated rotating contact control.

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A six-page bulletin obtainable from the National Transit Pump & Machine Co., Oil City, Pa., describes and illustrates the company's vertical four-cycle, multi-cylinder gas engines, convertible to oil.

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A 16-page booklet, available on request to the Yarnall-Waring Co., Chestnut Hill, Philadelphia, Pa., describes the Yarway cylinder-guided expansion joints, designed to provide for contraction and expansion in pipe lines.

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The Edwards Manufacturing Co., Fourth and Journal Streets, Cincinnati, Ohio, will send on request a 16-page booklet describing and illustrating the Edwards "All-Steel" buildings, for oil industry uses, which are sent to the purchaser in sections, ready to be bolted together.

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A four-page bulletin obtainable from the Allis-Chalmers Manufacturing Co., Milwaukee, Wis., describes Allis-Chalmers Motor reduction units.

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Advantages of the Ritter gas burner are discussed in a four-page bulletin published by the Ritter Gas Burner Corp., Neil P. Anderson Building, Fort Worth, Tex.

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The April number of the Water Tower, published by the Chicago Bridge & Iron Works, Chicago, contains interesting articles showing the usefulness of Horton steel tanks for storage purposes in the marketing of petroleum products.

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The new two-stage, air-cooled portable compressor developed by the Ingersoll-Rand Co., 11 Broadway, New York, is described and illustrated in a 36-page catalog issued by that company.

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An attractive two-color folder containing a complete description of a new line of four complete car washer units, announced by the Worthington Pump & Machinery Corp., Harrison, N. J., may be obtained by writing that company.

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"Properties of Toncan Iron" is the subject of an interesting booklet prepared by the Toncan Iron Metallurgical department of the Republic Steel Corp., Youngstown, Ohio, and mailed on request. The booklet presents comprehensive data on Toncan copper molybdenum iron.

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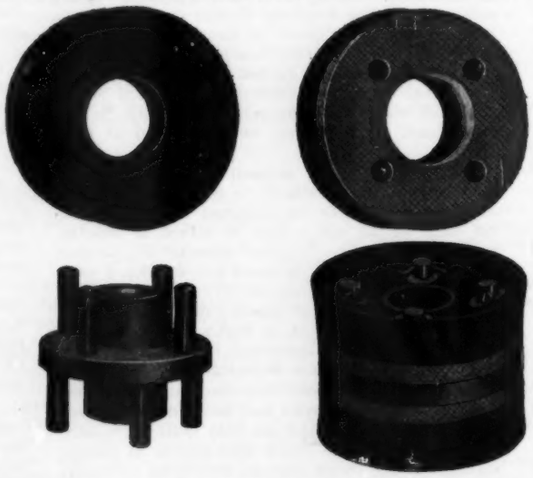
The National Tube Co., Pittsburgh, Pa., has for distribution a 16-page booklet which tells interestingly of the history of cement-lined pipe and tells of the development of "Duroline" pipe, one of its own products.

Mission Pump Piston Has No Heads or Follow Plates



A new pump piston, with no heads or follow plates, is announced by the Mission Manufacturing Co., Houston, Tex. It is made of high carbon, heat-treated, block forged steel, permitting less metal and more rubber to be used.

According to the company's announcement the following advantages are obtained: 1. Lightness of weight, reducing drag on rods and liners, thus reducing the upkeep on these pump parts. 2. Scientific design for supporting the rubber allows the use of a very flexible and flowing rubber, giving a greater wiping surface eliminating by-passing. 3. Replaceable rubbers quickly and easily changed. No nuts to loosen. No. frozen threads to break. 4. Piston bodies practically permanent because protected by soft flowing rubber. 5. Great strength proven by many deep tests under high pressures.

The company has available for distribution an illustrated folder on its new pump piston. Its companion, the Mission valve, is also described, together with other Mission products.

New Valve Developed For Remote Control of Flows

The Northern Equipment Co., Erie, Pa., has put on the market the new Copes thrustor-operated control valve for centralized remote control of flows of gases or liquids under pressure. This unit is operated by a General Electric thrustor, mounted at the side of the valve by a bracket firmly bolted to the valve bonnet. The thrustor is a self-contained power unit, consisting of a motor controlling an improved hydraulic cylinder. It applies a

straight-line, constant-pressure thrust on the valve lever, to open or close the valve, depending on the service requirements. The trustor operates in one direction only, the weight acting to return it to the original position when the electrical circuit is broken.

The thrustor can be controlled by push-button or time switch. External adjustment is provided to increase or decrease speed of the valve movement. The valve can operate at a rate of 40 times per minute without injury to any part. It has sufficient power to handle heavy viscous liquids. The motors cannot be overloaded, regardless of the amount of valve opening, and no limit switches are needed. Either 110 or 220-volt, 60 to 25 cycle, alternating current, or 125 or 250-volt direct-current may be used. The valve is the Copes type BI used with Copes feed-water regulators.

Marmon-Herrington Ships More Units for Iraq Line

Additional pipe hauling units to be used by the Iraq Petroleum Co. in the construction of a 1,200-mile pipe line across the Syrian Desert have been shipped by the Marmon-Herrington Co., Inc., of Indianapolis, Ind. These units, each consisting of a standard Harmon-Herrington six-wheel drive truck with semitrailer and trailer, are 100 feet long and are capable of hauling up to 50 tons of steel pipe at a speed of better than 20 miles an hour. They will be placed in service along with similar Marmon-Herrington equipment shipped several months ago.

Marmon-Herrington officials have received word of a remarkable performance record of one of the company's pipe hauling units now at work on the Iraq pipe line. This record, covering operations for one month, shows that the unit covered 119,478 ton-miles, hauled 1,027 tons of pipe, and traveled a total of 6,286 miles. Each load consisted of 50 lengths of steel pipe 12 inches in diameter and 40 feet long. The average load was 42 tons. The officials point out that this equipment has traveled nearly 30,000 miles without the necessity of a single major repair operation. Neither the base nor the head has been off the engine, and tires are lasting up to 30,000 miles. The units just shipped are larger in capacity than the equipment now in service.

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THE OIL AND GAS JOURNAL
Tulsa, Oklahoma.

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25 K.W. and 40 K.W. Gas Engines, 220 volts, D.C. Two 100 K.W. Gas Engine Generator Sets, 220 volts, D.C. 7x6 Ingersoll-Rand ER-1 Air Compressor. Six-inch Oster Pipe Threading Machine. Also, large stock of lathes, pipe machines, milling machines, etc. Send for our list. Terms to suit.
CINCINNATI MACHINERY & SUPPLY CO.
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REFINERY and GASOLINE PLANT EQUIPMENT
C. J. SMITH
532 Beacon Life Bldg., Tulsa, Okla.

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Located Burkburnett, Texas, strictly guaranteed, clean and ready for immediate delivery. Will sell one or more where located, or will move and re-erect on your grade at great saving. The newest tanks ever offered for sale. Wire, write or phone.
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5 and 10-ton Holt CATERPILLAR TRACTORS
Located Illinois, Indiana, Kentucky, and Texas.
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L. H. BADGER
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Wanted 85 HP to 225 HP Gas and Diesel Engines

WANTED one used wax filter press, size 36 inches or 48 inches. Used laboratory equipment for testing oils. One used metal constructed building approximately 60 by 150 feet, to be dismantled and moved to location. Address Box F-620, The Oil and Gas Journal, Tulsa, Okla.

Ranches—Farm Lands

FOR SALE—Hunting ranch 23,000 acres Brewster County Texas eighteen miles from Old Mexico. Black tail deer, white tail deer, fan tail deer, bear, mountain lion, quail and few antelope. Income bearing. Being foreclosed. Price three dollars per acre. Write for particulars to Otto Stolley, Austin, Texas.

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An organization backed by twenty years' practical oil experience, supplying well selected royalties to dealers only, who are interested in building satisfied clienteles.

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Present low oil prices are most favorable for royalty investments. Our twenty years' oil experience assures you of careful and intelligent selection.
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BE SAFE! — Get an unbiased report on royalties before buying—ask about our service.
ROYALTY ENGINEERS, INC.
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WELL SCOUTING SERVICE, New York and Pennsylvania Oriskany and deep sand development area. Weekly reports, accurate locations, accurate well elevations and dependable information. For details and specimen write L. S. Panyity, 66 Main Street, Bradford, Pa.

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KENTUCKY oil leases with shallow production proven. Have over 2,000 acres in best area and want deep test well in exchange for liberal division of assured production and leases. Address Box F-640, The Oil and aGs Journal, Tulsa, Okla.

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FOR SALE OR LEASING—Land in Muskegon, Michigan with strong oil and gas possibilities on which an incompleted well stands. Address 1901 S. Cicero Avenue, Cicero, Illinois.

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The next GREAT OIL FIELD will be in FLORIDA. If you want to get in on the ground floor, on the best and most promising wildcat proposition you have ever seen, and for a very little money, I invite you to get in touch with me. This goes for you, if you are a drilling contractor, supply man, promoter, operator, or dealer in leases. Address: Lloyd S. Malone, 2507 Watrous Avenue, Tampa, Fla. Phone H-44-063. References furnished and requested.

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THE OIL AND GAS JOURNAL
Tulsa, Oklahoma.

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JAMES E. MILLER CO., 207½ E. Third St., Tulsa, Okla., will co-operate with responsible parties seeking aid in financing projects of higher order.

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Corporations requiring capital for promotion or expansion are invited to communicate with the undersigned.
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Before disclosing your invention to anyone, send for blank form,
Evidence of Conception.
Bulletin "How to Establish Your Rights" and complete information free.
LANCASTER, ALLWINE & ROMMEL
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Leases, assignments, releases, township plat books, well records, etc. Request on your letterhead gets free catalog. Olds Press, 215 East Third St., Tulsa, Okla.

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The difference between a new plant that can meet the new specifications at a profit and an old plant that can't - is largely a matter of control.

Neilan Controllers are helping the new plants cash in. They will help you teach your plant new tricks and cheat old age. For profits, specify: **Neilan.**

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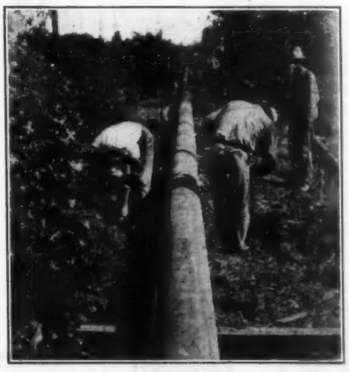
Some AIRCOWELDED Pipe Lines

ONE OF A SERIES depicting the widespread use of AIRCOWELDING, a combination of a *special alloy rod* and a *simplified oxyacetylene welding technique* developed by AIRCO Research Laboratories specifically for pipe lines, which has made possible the production of welds consistently stronger than the parent pipe at more than double the output of former methods, and with from 30 to 50 percent less rod and gases.

This demonstration of the quality of welds made by the AIRCOWELDING process, is thoroughly convincing. Short pieces of 8" pipe were AIRCOWELDED between two regular lengths. Using a truck, the pipe was bent around a tree. Above, you see the result. Note that sharpest part of bend comes exactly at one of the welds. All welds held perfectly.

Two views of the job in progress. Below is shown a tie-in, or position Aircoweld, in the making. An AIRCOWELDED line is virtually one long pipe, smooth on the inside, uniform in strength and leak-proof throughout its entire length.



Gasoline gathering System at EXCELSIOR REFINING Co.'s Turnertown, Texas, plant is AIRCOWELDED...

All of the gathering system, consisting of 8" salvaged pipe, and certain parts of the plant, are AIRCOWELDED.

The company unhesitatingly decided to use AIRCOWELDING after witnessing a demonstration including the following unusually severe test.

Several short pieces of the 8" pipe were cut off and AIRCOWELDED between two regular lengths. All were position welds, some of them made by welders doing AIRCOWELDING for the first time following instructions. Placing the welded section against a tree, the pipe was bent with the aid of a truck. In the upper illustrations at the left, you see the result. All of the welds held perfectly, including the one which came exactly at the sharpest part of the bend.

AIRCOWELDING lived up to this demonstration throughout the job and in addition, proved that it is a more economical pipe welding process.

WRITE FOR THE AIRCOWELDING BULLETIN...

it gives complete details of this modern, money-saving method of pipe welding. Your request to the nearest of the District Offices below will bring you a copy.

AIR REDUCTION SALES CO.

General Offices: 60 East 42nd. St., New York, N. Y.

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Represented in Texas by Magnolia Airco Gas Products Co., Houston, Beaumont, Wichita Falls, El Paso, Fort Worth and San Antonio

Represented in Canada by Railway & Engineering Specialties, Ltd., Toronto, Montreal, Winnipeg

A NATION-WIDE WELDING SUPPLY SERVICE

The Oil and Gas Journal, issued weekly by The Petroleum Publishing Company, 114-116 West Second Street, Tulsa, Oklahoma. Subscription price $6.00 a year; 15 cents a copy. Entered as second-class mail matter December 15, 1911, at the post office at Tulsa, Okla., under the Act of March 3, 1879.

"OILWELL'S" NO. 12 & NO. 16
PUMPING JACKS
New Design • Heavy Duty
OIL BATH BEARINGS

Service Specifications

Jack Size	*No. 12*	*No. 16*
Type	Arc or Link	Arc or Link
Rated Polished Rod Load	12,000-lbs.	16,000-lbs.
Adjustable Polished Rod Stroke:		
Arc Type	44" Max.	50" Max.
Link Type	48" Max.	54" Max.
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Maximum Ratio, Polished Rod to Pull Rod Stroke	1.71 to 1	1.77 to 1

Rigid, structural frame and beam designed to meet deep well pumping requirements.

Saddle and pull strap bearings are oil bath, oil sealed, bronze bushed and weatherproof, insuring dependable lubrication and long life.

Wide range adjustable polished rod stroke with arc straight line motion.

Easy to assemble in the field—only four sections to put together.

All steel arc-welded construction.

Ask for Leaflet No. 6 at nearest "Oilwell" store.

OIL WELL SUPPLY CO.

Branch Stores in all Oil Fields

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

2234

"OILWELL"

Saving Time and Labor with EAGLE Sublimed Litharge

Goes into solution faster!

Reason number one for using Eagle Sublimed Litharge: due to its extremely small particle size—ten times the specific surface of regular Litharge—it goes into solution faster, thus effecting a saving of time. A generous free sample, sent on your request, will quickly demonstrate this advantage.

Stays in suspension—

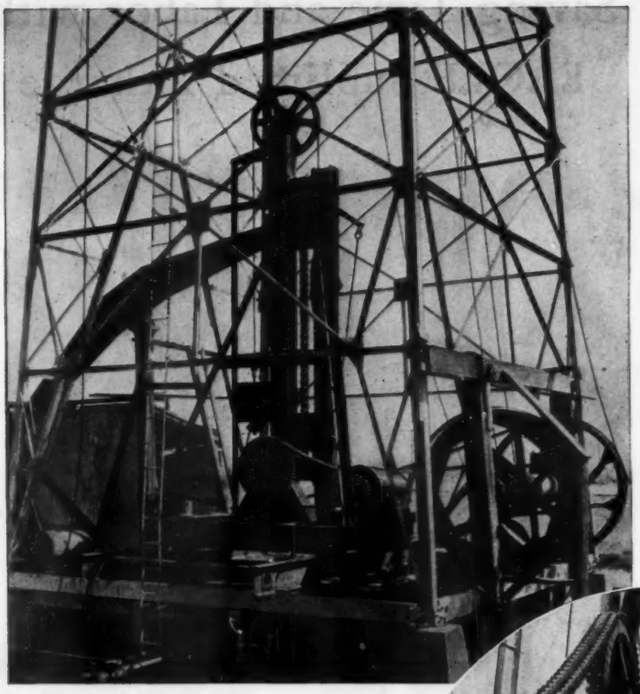
Reason number two: it stays in suspension, keeping the agitator air lines free. Excess settles out in a fluffy, easily-agitated mass, not caking on the tank bottom. Saves labor as well as time. Same price as our regular Refiner's Litharge. *The Eagle-Picher Lead Company, Chicago, Joplin, Cincinnati.*

REG. U.S. PAT. OFF.

EAGLE *Sublimed* LITHARGE

Made by the makers of

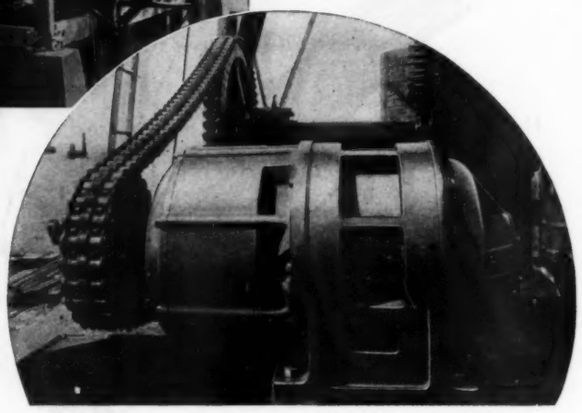
EAGLE OIL REFINER'S LITHARGE



G-E gear-motor on a long-stroke pumping rig in a Houston, Texas, oil field

NEW

economies in slow-motion or long-stroke pumping with G-E GEAR-MOTORS



YOU can lower power, maintenance, and installation costs if you'll pump your stripper wells, or drive your long-stroke pumpers, with G-E gear-motors. These compact, low-speed drives, only slightly larger than standard motors, combine the economies of high-speed motors with accurately cut helical gears that run in a bath of oil. G-E gear-motors, available in a wide range of speeds and ratings, will meet the speed requirement of each well, and will hold exactly that speed.

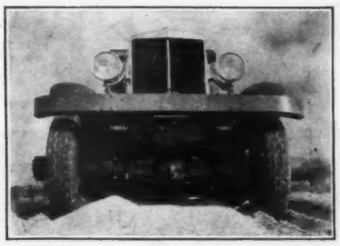
The dependability and low maintenance costs of G-E gear-motors are indicated by the above installation on a long-stroke, low-speed pumping unit in a Houston oil field. The Cameron Iron Works, manufacturers of this pumping unit, say:

"The 30-hp. gear-motor that we purchased from you last year has operated day and night for a total of 176 days of continuous service without having a wrench on it. No adjustments were necessary on any part of the motor. The oil was changed twice; however, the old oil was apparently in good condition."

If you are considering slow-motion or long-stroke pumping, it will pay you to obtain full information about G-E gear-motors. Write for a copy of our six-page gear-motor bulletin, GES-764. Address the nearest G-E office, or General Electric Company, Dept. 6-201, Schenectady, N.Y.

200-682A

GENERAL ELECTRIC



NOW AVAILABLE TO THE OIL INDUSTRY

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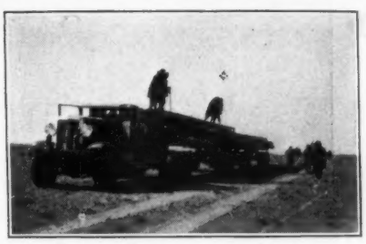
This thick, gumbo mud in the Furkus flat is no obstacle to 38-long-ton payloads hauled by Marmon-Herrington equipment.

ADVANTAGES *for* EVERY BRANCH *of* OIL INDUSTRY

Marmon-Herrington trucks easily perform jobs ordinarily assigned to the tractor. Axle-deep sand, mud and ditches are no obstacles. Performance in hilly country is truly remarkable. To these advantages is added the ability to maintain high road speeds—hour after hour without a trace of fatigue. Marmon-Herrington trucks are rugged and dependable, yet they handle with the ease of a passenger car. The new line includes models to haul from 1½ tons upward. Thus, Marmon-Herrington advantages are available to every branch of the oil industry.

119,478 TON-MILES* *in a* SINGLE MONTH



Giant Marmon-Herrington pipe-hauling equipment at El Beida, Syria, loaded with 38-long-tons of steel pipe used in building the 1200-mile pipe line across the Syrian desert.

THERE is no more vivid example of how Marmon-Herrington is serving the oil industry than the performance-record of giant Marmon-Hertington pipe-hauling equipment now "on the job" for the Iraq Petroleum Company on the Syrian desert. This equipment is traveling 200 to 300 miles per day with loads of steel pipe weighing more than 38-long-tons each. In a single month, recently, the unprecedented total of 119,478 long-ton-miles was reached and the equipment now has traveled nearly 35,000 miles without major repair. As a result of this remarkable performance, the Iraq Petroleum Company recently placed a large additional order for similar Marmon-Herrington equipment.

★ Computed on the basis of long tons — long ton equals 2240 pounds.

CLIP . . . MAIL

MARMON-HERRINGTON CO., INC.
Indianapolis, Ind.

Send me complete specifications and details concerning your new line of all-wheel-drive motor trucks.

NAME_____

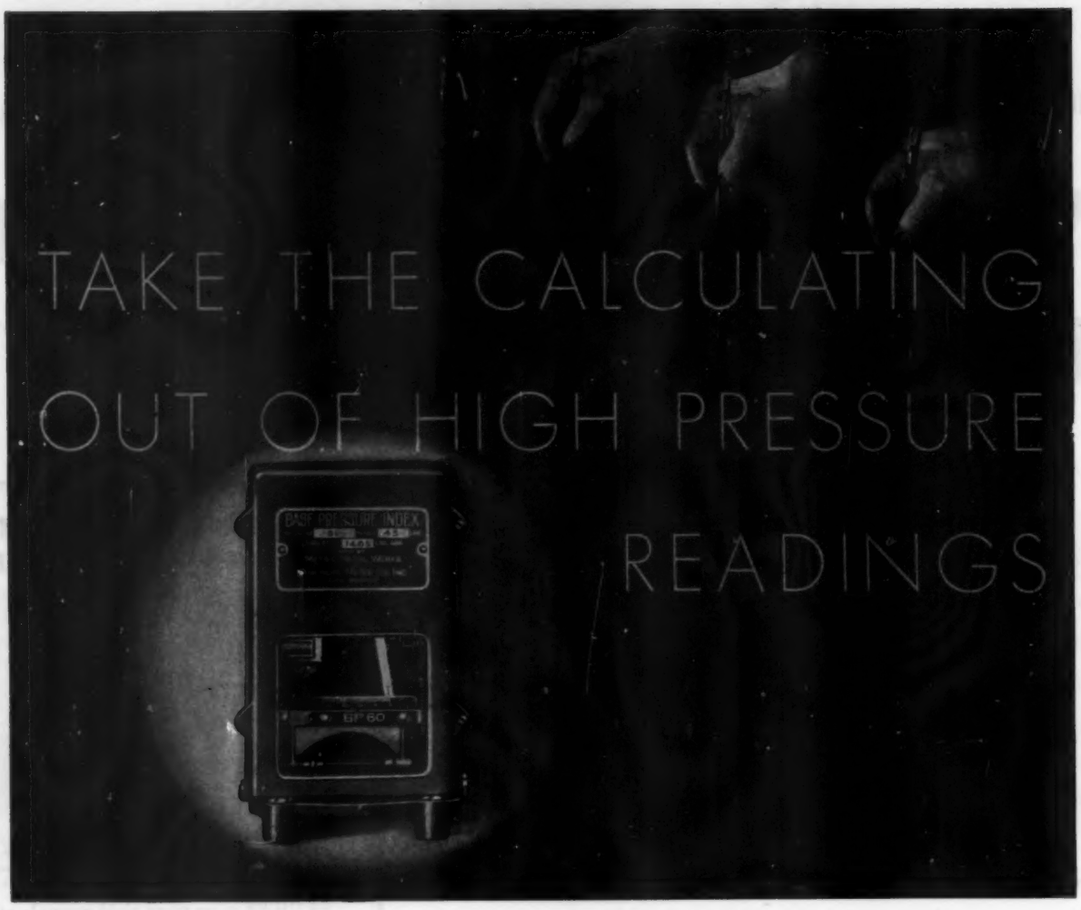
COMPANY_____

CITY AND STATE_____

MARMON-HERRINGTON CO., INC.

Factory and Main Offices, Indianapolis, Ind., Cable Address MARTON *(Bentley Code)*

NEW LINE OF FOUR- AND SIX-WHEEL-DRIVE TRUCKS TO HAUL 1½ TONS UPWARD



● Totalized readings . . . automatically . . . continuously! Chart calculating is eliminated. High pressure readings are simplified. Contract billing data is always available . . . instantly.

The BASE PRESSURE INDEX continuously registers a totalized reading of the quantity of gas which has passed through the displacement meter (at the base pressure). Each hundred cubic feet (actual volume at line pressure) is multiplied by the pressure factor which applies for the line pressure and the pressure base.

This instrument is ruggedly made, and can be tested and adjusted in the field.

If a permanent record of the hourly rate of flow and pressure is desired, a VOLUME AND PRESSURE GAGE also is used.

Engineering bulletin E-12 gives all the details of application, operation and installation. It will be mailed on request.

AMERICAN METER COMPANY
INCORPORATED
Measurement and control of Gas, Oil, Steam, Air and Liquids
ESTABLISHED 1836
METRIC METAL WORKS *ERIE, PENNSYLVANIA*
Albany Baltimore Birmingham Boston Chicago Denver Erie Kansas City
Los Angeles Philadelphia Pittsburgh New York San Francisco
WESTCOTT & GREIS, INC., Dallas, Tulsa CANADIAN METER CO. LTD., Hamilton, Ontario

AMERICAN METER CO.

725

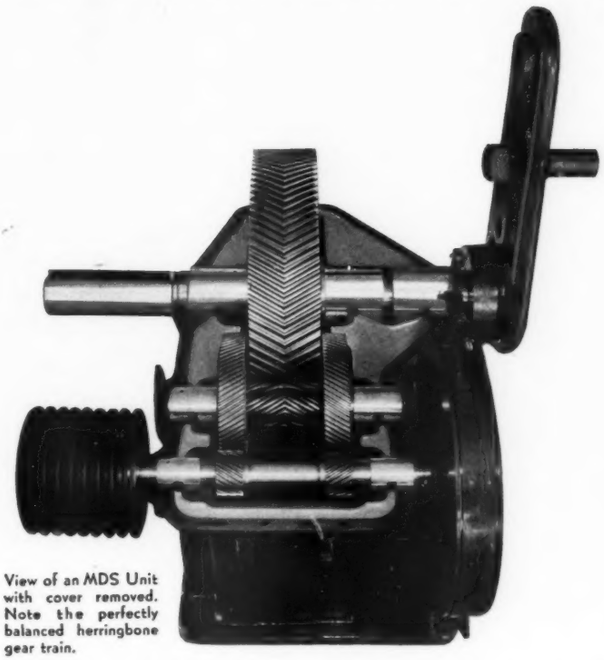
CONSIDER YOUR LOWERED PUMPING COST

WITH

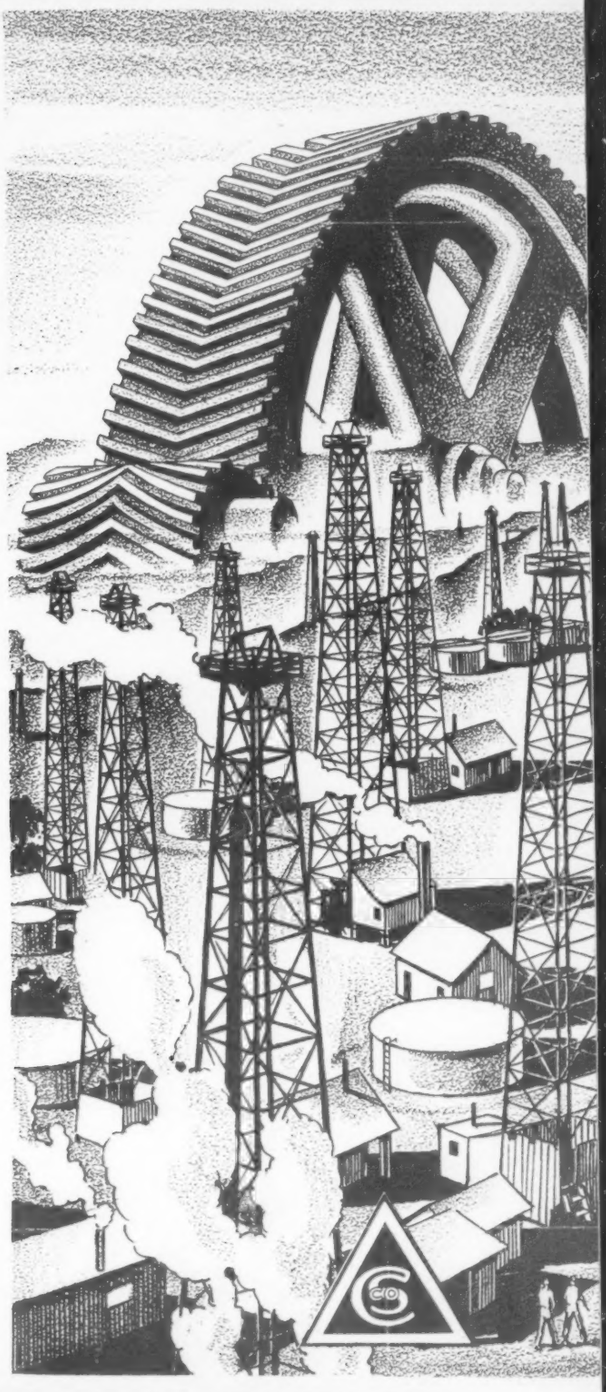
EMSCO

FALK

PRODUCTION GEARS



View of an MDS Unit with cover removed. Note the perfectly balanced herringbone gear train.



Falk Herringbone Gears Operating at the highest efficiency obtainable in the mechanical transmission of power provide for pumping your wells with

1. Competitive first cost.
2. Lowest power requirement.
3. Longest life.
4. Lowest maintenance.
5. Greatest salvage value

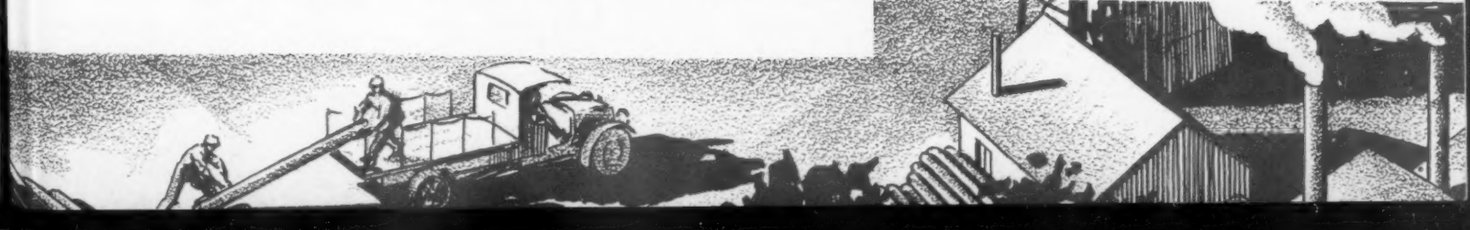
"Serving the Oil and Gas Industries"

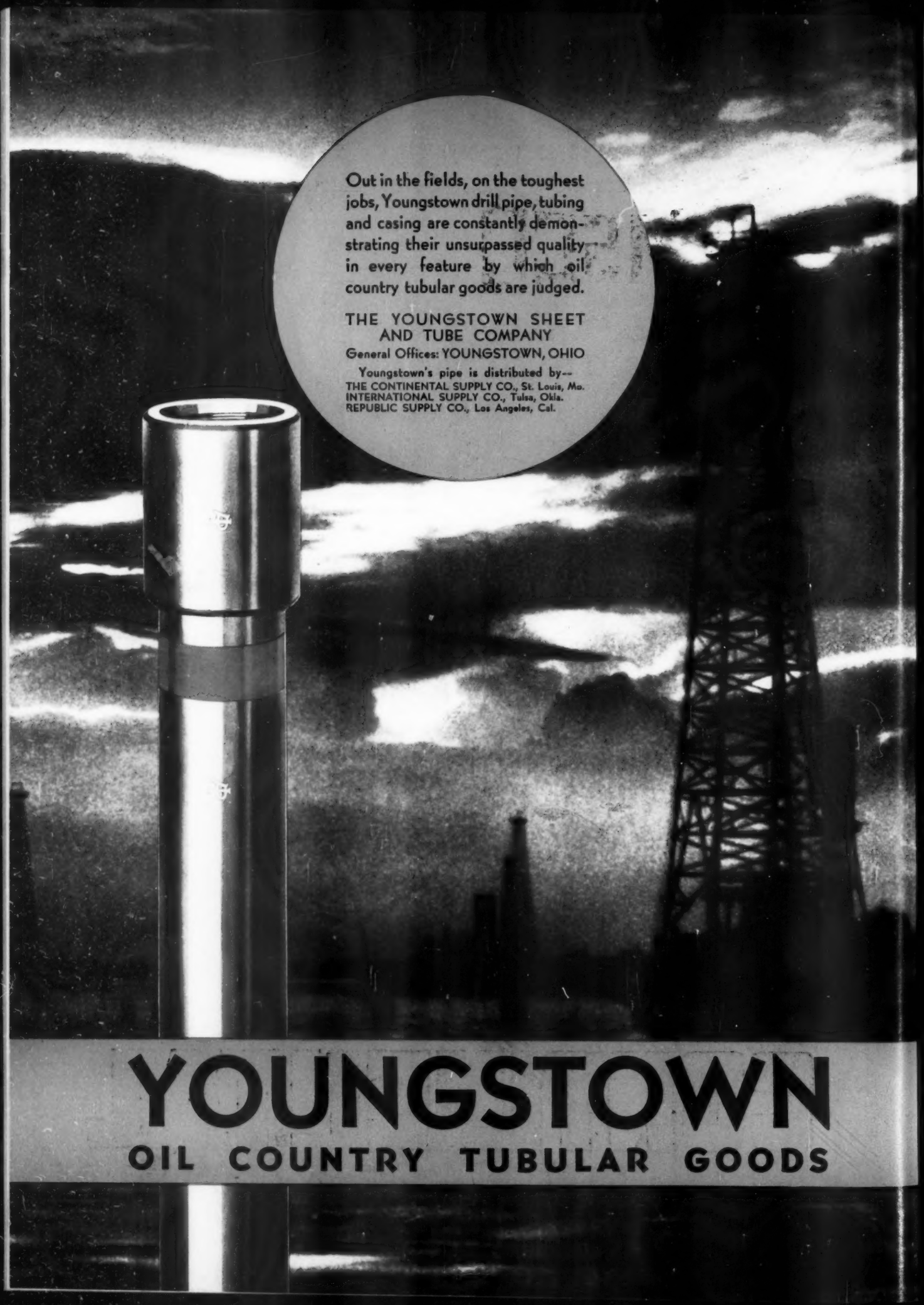
THE CONTINENTAL SUPPLY COMPANY

GENERAL OFFICES: ST. LOUIS

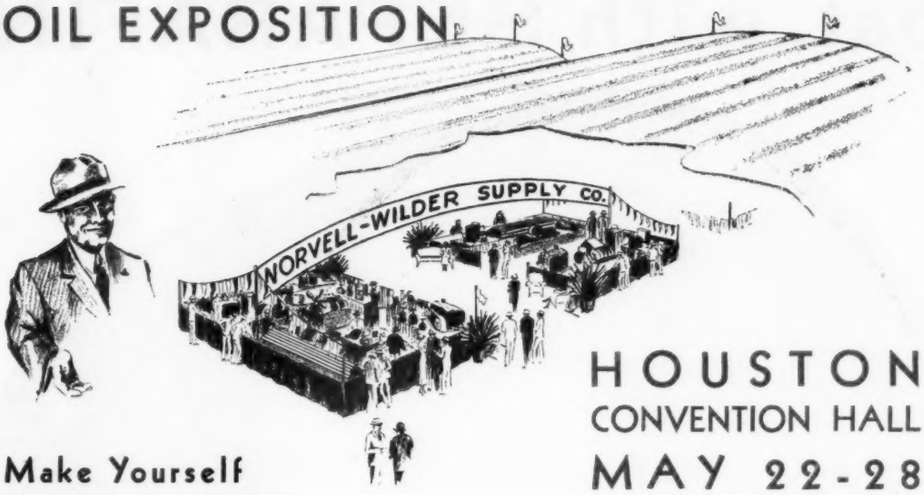
THE CONTINENTAL SUPPLY CO., LTD., 618 Lancaster Bldg., Calgary, Alberta, Canada
Export Offices: CONTINENTAL EMSCO CO., Inc., 19 Rector St., New York
London Offices: Dashwood House, Old Broad Street, London, E. C. 2, England
CONTINENTAL EMSCO S.A.R. Strada Marfurilor, Ploesti, Romania

CONTINENTAL




Out in the fields, on the toughest jobs, Youngstown drill pipe, tubing and casing are constantly demonstrating their unsurpassed quality in every feature by which oil country tubular goods are judged.
THE YOUNGSTOWN SHEET AND TUBE COMPANY
General Offices: YOUNGSTOWN, OHIO
Youngstown's pipe is distributed by--
THE CONTINENTAL SUPPLY CO., St. Louis, Mo.
INTERNATIONAL SUPPLY CO., Tulsa, Okla.
REPUBLIC SUPPLY CO., Los Angeles, Cal.
YOUNGSTOWN
OIL COUNTRY TUBULAR GOODS

MEET
The NORVELL-WILDER MAN
at the
OIL EXPOSITION



HOUSTON
CONVENTION HALL
MAY 22-28

Make Yourself At Home in the
NORVELL-WILDER SECTION
1800 SQ. FEET OF SPACE
for your comfort and profit

TO PROVIDE FOR YOUR COMFORT we have set aside, in the Norvell-Wilder section of 1800 square feet, the space of six booths as a reception room. Here you can sit down and rest as our guests.

TO PROVIDE FOR YOUR PROFIT leading manufacturers of oil field tools which we have the pleasure and privilege of distributing to the great oil industry, are demonstrating their products in the adjoining twelve booths.

IN THEIR STRIFE FOR SUCCESS

operators realize that their reputation as safe, dependable, and skillful oil men depends to a large degree on the kind of equipment they use. To enable operators to choose superior, modern equipment, the Norvell-Wilder demonstration booths are provided.

DROP IN AND MEET THE NORVELL-WILDER MAN

SEE
the products of these exhibitors:

JONES & LAUGHLIN STEEL CORP.
•
DEAN BROTHERS COMPANY
•
A. LESCHEN & SONS ROPE CO.
•
KENNEDY VALVE MANUFACTURING COMPANY
•
KEROTEST MANUFACTURING CO.
•
HERCULES MOTORS CORP.
•
BAASH-ROSS TOOL COMPANY, Inc.
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CHAIN BELT COMPANY
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QUIGLEY COMPANY, Incorporated
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JEFFERSON UNION COMPANY
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SAVE WITH SEPARAFINE

Crude, B.S. and Paraffin are successfully treated, at lower cost, with SEPARAFINE

Major companies have gladly turned to this proven product, covered by the Gorman Patents, due to several reasons, principal of which, are:—

(1) No heat required—in treatment of emulsions—paraffin—low gravity oils. Especially desirable where no heating gas is available.

(2) Patented treating formula—especially prepared for treating of paraffin.

You will learn more about Separafine later—in the meantime full data and information will be gladly furnished on request. Let us help you solve your oil treating problems.

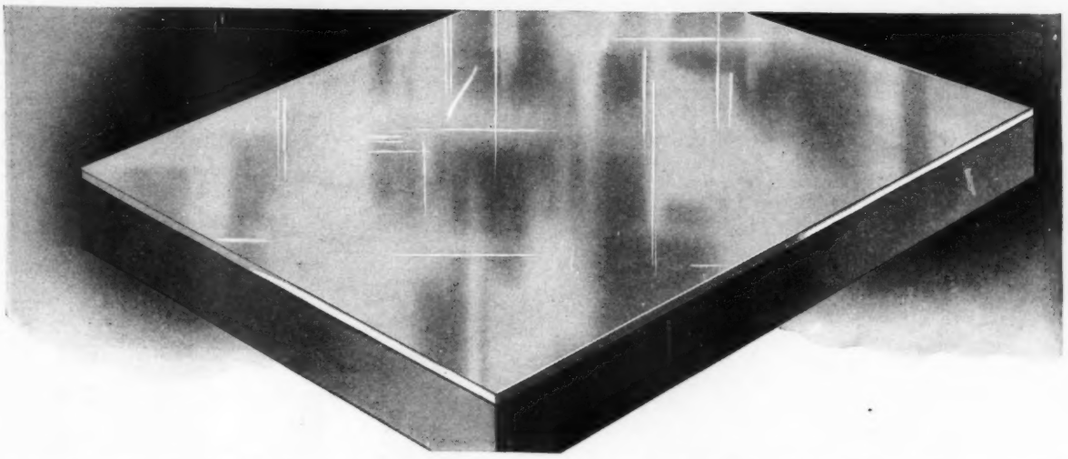
SEPARAFINE MANUFACTURING COMPANY
500 WEST 10th STREET BRISTOW, OKLAHOMA

IN THE EAST TEXAS FIELD

SEPARAFINE CHEMICAL SALES COMPANY
C. P. PORTER, Manager C. R. STEVENS, Engineer
KILGORE, TEXAS

Announcing

USS STAINLESS CLAD "PLYKROME"



A composite steel with a corrosion-resistant surface of USS Stainless Steel perfectly bonded to a backing of carbon steel. Produced by subsidiary manufacturing companies of United States Steel Corporation.

Plykrome may be fabricated, spun, drawn, stamped, etc., with the same ease and technique as ordinary steel.

The permanence of the Plykrome bond is assured, by the unique metallurgical and manufacturing conditions under which Plykrome is produced.

For further information write to Illinois Steel Company

Illinois Steel Company

208 SOUTH LA SALLE STREET, CHICAGO, ILLINOIS

SUBSIDIARY OF UNITED STATES STEEL CORPORATION

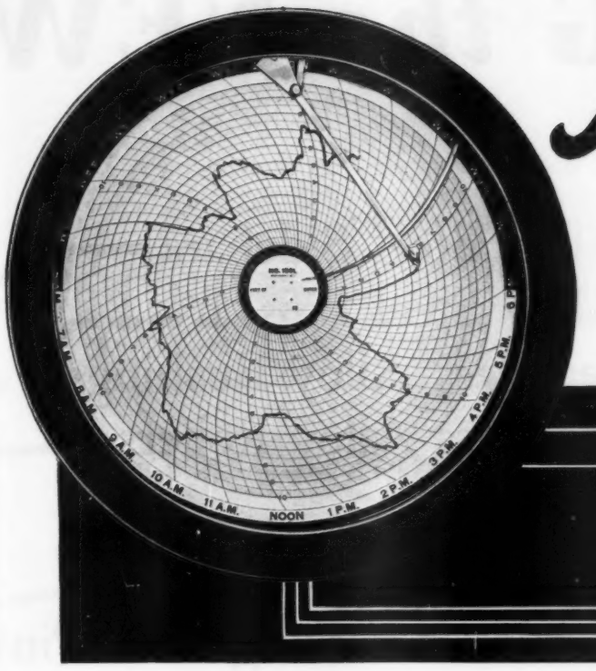
Plykrome Is Produced Under Exclusive License of the Plykrome Corporation of New York

USS Chromium-Nickel Alloy Steels Are Produced Under Licenses of The Chemical Foundation, Inc., New York, and Fried. Krupp A. G. of Germany

114-foot, 6-inch All-Welded Tank

THE Wyatt tank roof structure eliminates dead wood and decreases the first cost. The greater net capacity of the tank, with the further economies of the Wyatt All-Welded tanks, gives the purchaser the lowest per barrel cost.

WYATT
Metal & Boiler Works
Plants at Dallas and Houston



At Last!

An Electric Area Flow Meter

For CHEMICALS, TARS, HEAVY OILS, DISTILLATES,

Records and Indicates Rate of Flow at any Distance

HERE'S a new flow meter that indicates or records at a distance if desired the "rate of flow" of anhydrous ammonia, and concentrated sulphuric acid, etc., as well as tars, heavy fuel oils, distillates. Easy to install, it has no stuffing boxes or pressure tight bearings. In its installation no orifice plate or venturi tube, no tubing, valves, seals, mercury and complex piping is required. It is unaffected by dirt and functions without constant attention. Meter body goes in the line like a valve.

Electrical transmission permits the Indicating or Recording meter to be located at any distance from the meter body.

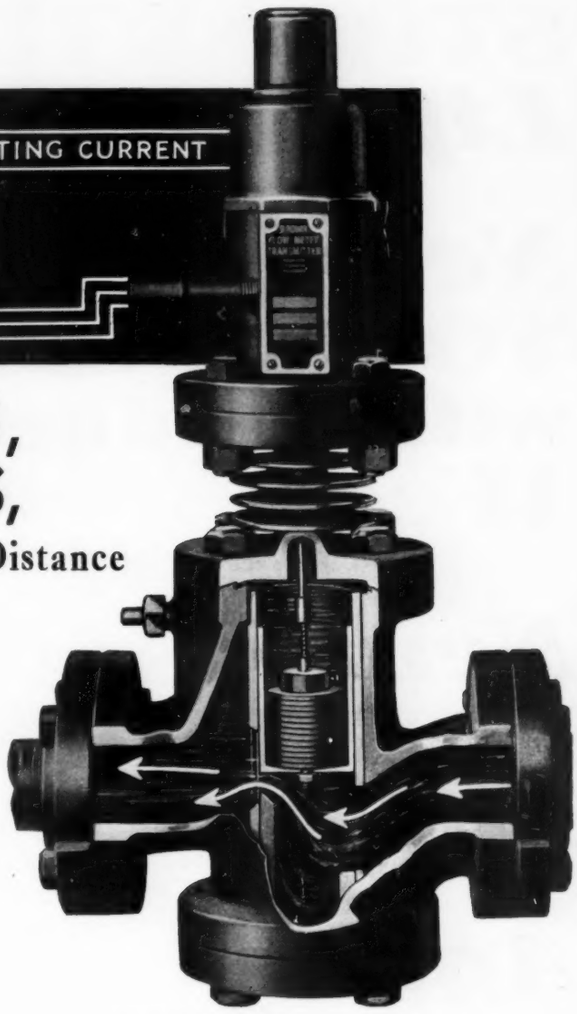
The flow is recorded in units, on gallons, barrels, cubic feet or pounds per hour on a 12″ circular chart, equally graduated.

The Brown Area Flow Meter operates on the fundamental principle of all area meters—the flow is proportional to the area of orifice exposed. Combined with this principle is the exclusive feature of the Brown Electric Flow Meter—the Inductance Bridge Principle.

This combination makes the Brown Area Flow Meter the only area meter with electrical transmission available today. In many plants it has demonstrated its value as an aid to economy.

Write for Bulletin No. 21

THE BROWN INSTRUMENT COMPANY
4488 Wayne Avenue Philadelphia, Pa.
Branches in 22 Principal Cities



GOES IN THE LINE LIKE A VALVE

THE Brown Area Flow Meter maintains a constant differential by varying the area of the orifice. *Example:* As the flow increases the weighted piston rises and exposes more orifice area.

The orifice is a rectangular slot cut in the sleeve in which the piston slides. While the weight of the piston is fixed for a given installation it can be readily changed to meet new conditions.

The operating parts may be made of bronze or stainless steel as conditions indicate.

BROWN AREA FLOW METER

on the Inductance Bridge Principle

ANNOUNCING *the* NEW

New* STRENGTH *Life

- Alloy Steel Sidebars
- Alloy Steel Pins
- Seamless Alloy Bushings
- Seamless Alloy Rollers

New* TOUGHNESS with Hardness *Wear

- Heat-Treated Sidebars
- Hardened & Toughened Pins
- Heat-Treated Rollers
- Case-Hardened Bushings

New* PRECISION *Safety

- Ground Pins
- Ground Bushings
- Finished Rollers
- Sidebars—Die Cut — No Sharp Notches

***Again* COMBINED into the Unit Link**

DEEPWELL CHABELCO

Stocked in all active Oil Fields

1030 D.W. 3 = A.P.I. 3 1240 D.W. 4 = A.P.I. 4

REX *Deep Well*

WORLD'S LARGEST WATER DEVELOPERS

Out of Layne's 50 years in the field has come the world's most distinctive water supply organization. In it you will find hydrological experts steeped in the study of the development of subterranean water supplies. They have special engineers trained in the Layne method of well construction and operation. They have designers and engineers striving day in and day out to make Layne Pumps still more efficient and still more economical. But most important is this: Back of them—guiding their minds and hands in the manufacture of every Layne Pump and the construction of every Layne Well—are all the time-tested facts gleaned in 50 years of priceless experience. That is why Layne Well Water Systems come to you guaranteed on a basis of "Water or No Pay" to deliver the greatest volume of water at the least possible cost.

* * * *

LAYNE & BOWLER, Inc.
Dept. H., General Offices;
Memphis, Tennessee.

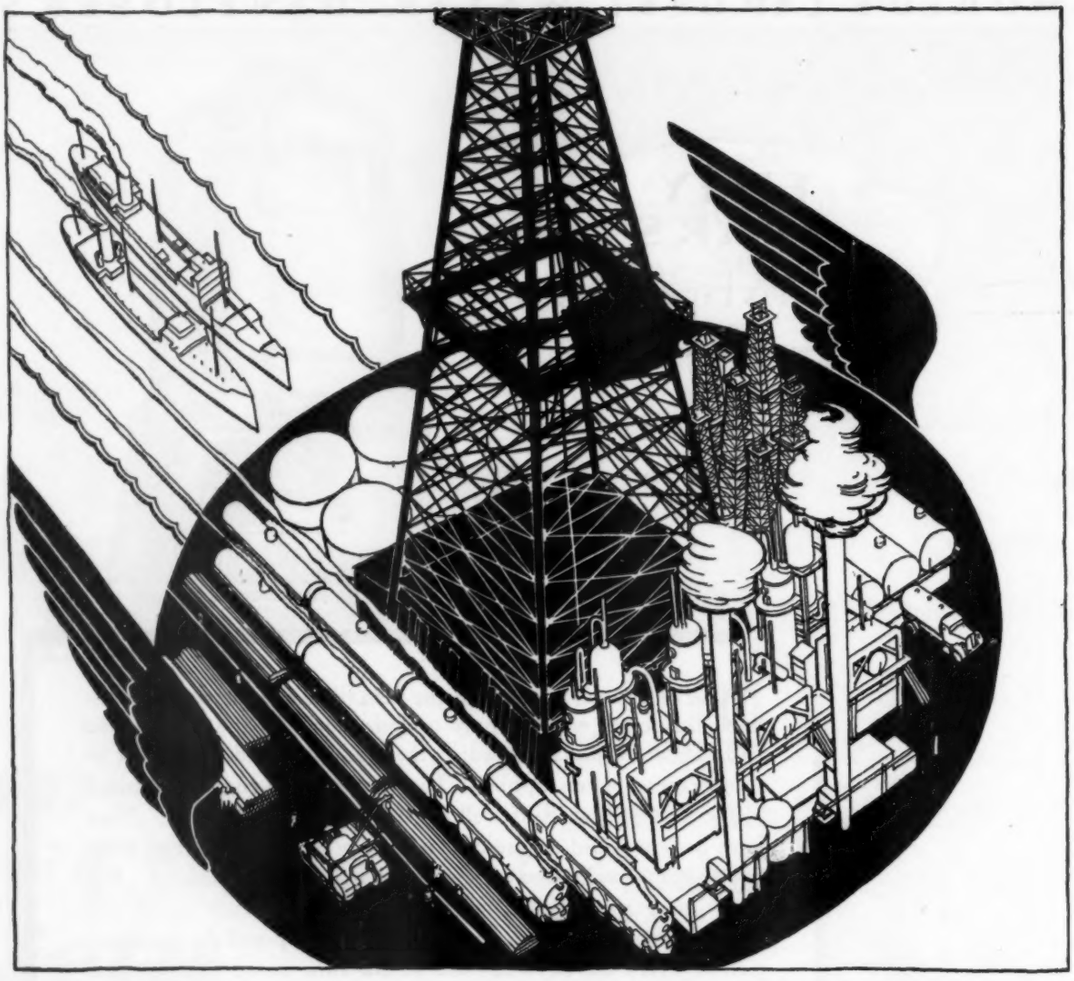
Layne & Bowler, Inc., Dept. H, Memphis, Tenn.

Send me free bulletins on Layne Pumps, Wells, Well Water Systems of special value to oil and gas engineers and executives.

Name .....

Address .....

LAYNE PUMPS
AND WELL WATER SYSTEMS



THERE IS JUST ONE WAY TO PLAY SAFE WITH CORROSION

Corrosion plays a mighty important part in determining the life of production equipment, and constitutes one of the most serious items of trouble and expense. Since the degree of corrosion varies from field to field and even from well to well, there is only one safe way to combat it, and that is by using equipment made of a corrosion-resisting alloy.

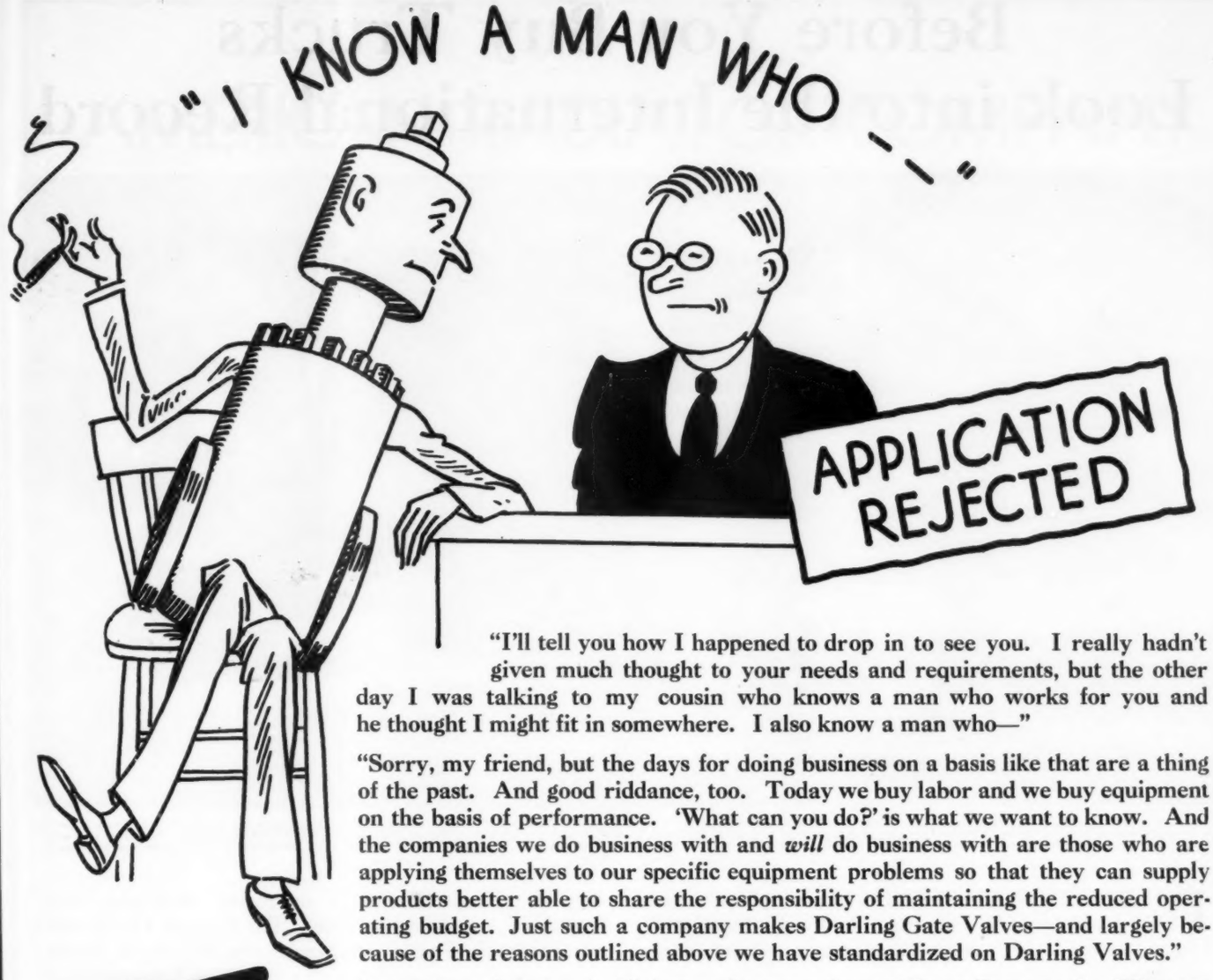
Toncan Iron is such an alloy. Refined iron, copper and molybdenum are alloyed to form a new metal resistant to atmospheric influences, and salt and sulphur corrosion. Tests in the laboratory and in actual service in the field attest its ability to last longer—to maintain production—to cut operating costs.

It is available in casing, tubing and line pipe. Several manufacturers of strainers are using it because it withstands not only the natural corroding influences but also cleaning with acid. It is ideal for sucker rods, working barrels, valve parts, storage tanks, and in the refinery in any equipment coming into contact with acid sludge.

Let us send you the story of this interesting metal—Toncan Iron—as told in "Pipe for Permanence."

REPUBLIC STEEL CORPORATION
GENERAL OFFICES YOUNGSTOWN, OHIO

U.S. PAT. OFF.
TONCAN
COPPER MO-LYB-DEN-UM
IRON

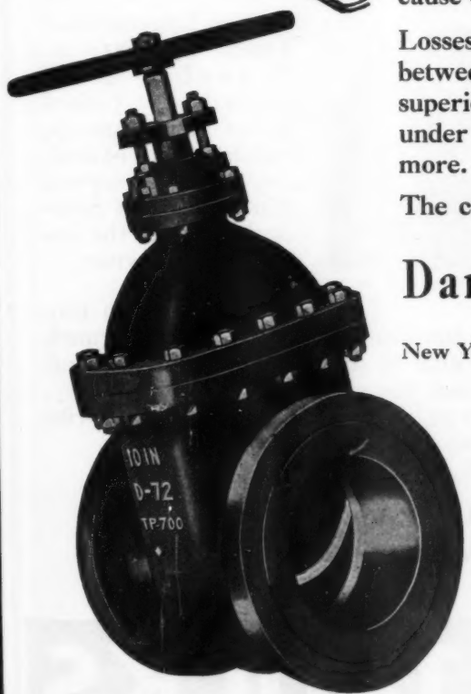


"I'll tell you how I happened to drop in to see you. I really hadn't given much thought to your needs and requirements, but the other day I was talking to my cousin who knows a man who works for you and he thought I might fit in somewhere. I also know a man who—"

"Sorry, my friend, but the days for doing business on a basis like that are a thing of the past. And good riddance, too. Today we buy labor and we buy equipment on the basis of performance. 'What can you do?' is what we want to know. And the companies we do business with and *will* do business with are those who are applying themselves to our specific equipment problems so that they can supply products better able to share the responsibility of maintaining the reduced operating budget. Just such a company makes Darling Gate Valves—and largely because of the reasons outlined above we have standardized on Darling Valves."

Losses from inferior, inefficient, unknown valves might easily mean the difference between red and black ink in the ledgers. Darling Valves soon demonstrate their superior performance economies because they are built to perform positively under the most exacting and extreme conditions—that is why they cost a little more.

The complete Darling line is pictured in the catalog. Write for it.



Darling Gate Valves are built in the necessary sizes for Drilling, Well Control, Pipe Lines, Well Flow Lines, Refinery, Power Plant and Compressor Stations.

Darling Valve & Manufacturing Company

WILLIAMSPORT, PA.

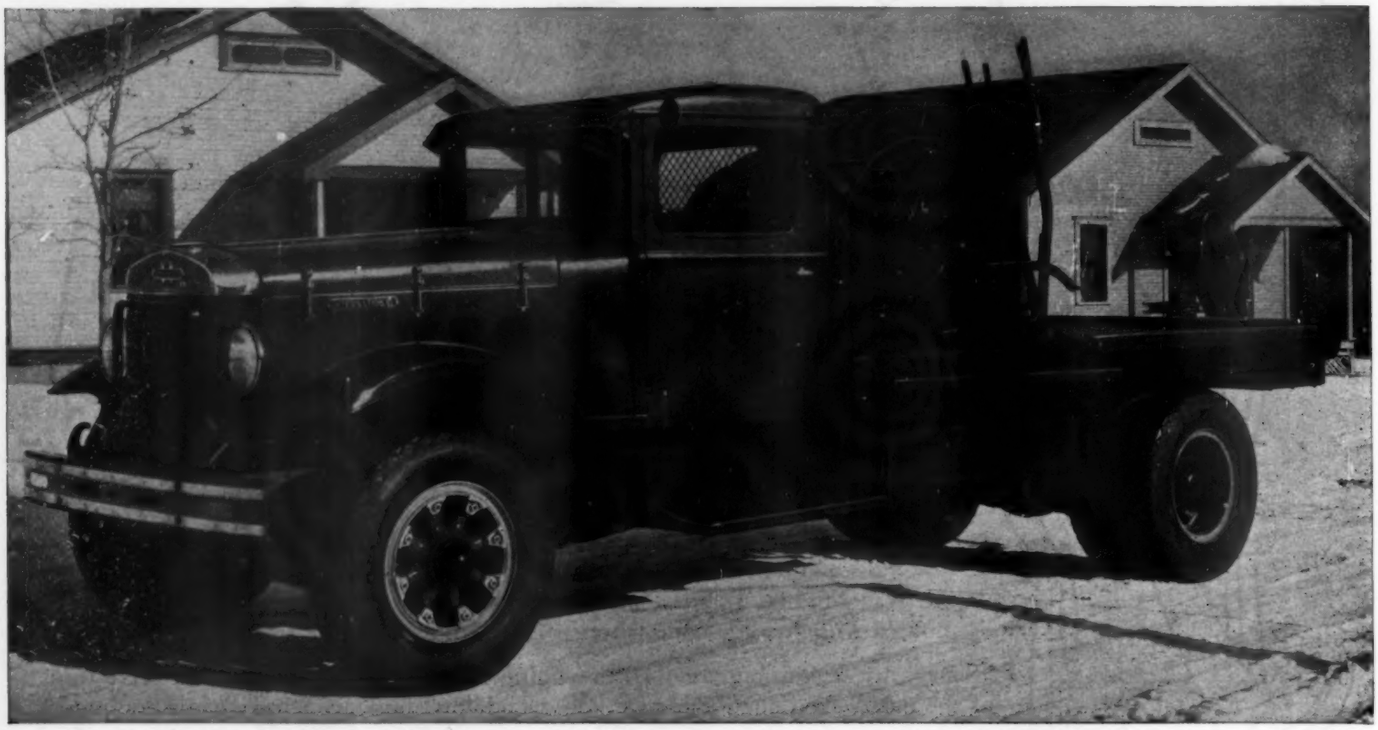
New York Oklahoma City Houston

Mid-Continent Distributors:
International Supply Co.

California Distributors:
Hickey Pipe & Supply Company
3375 East Slauson Ave., Los Angeles, Calif.

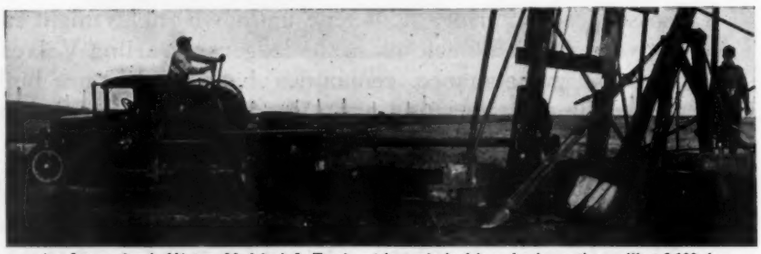
DARLING
GATE VALVES

Before You Buy Trucks Look into the International Record



This International 7½-ton Model A-8 Truck equipped with a heavy-duty well-pulling winch is the second of its kind to be placed in service by the Mid-Kansas Oil & Gas Co. The winch is geared to the truck engine through a special patented bevel gear box to provide a range of line pulls from 2,000 pounds with a single line at high-high speed to 78,000 pounds with three lines at low-low speed. The winch is controlled from a platform built on the side of the truck bed and is so mounted that there is left a bed of almost standard truck dimensions for heavy-duty haulage purposes.

INTERNATIONAL TRUCK development has been under way for 34 years. Today International Harvester ranks high among the leaders in truck manufacture, making both speed and heavy-duty models for all hauling requirements. In 1932, for example, nearly 22 per cent of all 2-ton trucks registered were Internationals, yet 49 other manufacturers competed for this great market. *International leads the field in heavy-duty truck registration.* This record is convincing proof of owner satisfaction.



An International 1½-ton Model A-3 Truck with a winch driven by its engine pulling 3,100 feet of rods at Burbank, Okla., for the Gypsy Oil Company.

International Truck success is based on true quality, long-lived efficiency, operating economy, and matchless after-sale service. The largest Company-owned truck service organization in the world stands back of International Truck operation. Branches at 184 points in the United States and Canada, and thousands of dealers, provide a service that is of great practical value to the International owner.

Before you buy trucks investigate Internationals. The nearest branch or dealer will be glad to show you the full line and demonstrate for you. Sizes range from ½-ton to 7½-ton. Chassis prices as low as $360 f.o.b. factory. Write us for information.

INTERNATIONAL HARVESTER COMPANY
OF AMERICA
(Incorporated)
606 So. Michigan Ave. Chicago, Illinois

INTERNATIONAL TRUCKS

AMERICAN RADIATOR COMPANY

Announces

the Acquisition of the

ROSS HEATER & MFG. CO., INC.

The service of these two companies to the Petroleum Industry will hereafter be carried on by the Ross Heater and Mfg. Co., Inc. as a division of American Radiator Company.

All inquiries and correspondence relating to the products formerly manufactured by the Ross Heater & Mfg. Co., Inc. and by the Industrial Division of American Radiator Company should be addressed to the nearest Ross office or to the main office at Buffalo, N. Y.

HEAT EXCHANGERS — CONDENSERS — COOLERS

STERLING SECTIONS — ARCO METAL PIPE — STERLING BUBBLE CAPS

STEAM JET VACUUM PUMPS — EXPANSION JOINTS

ROSS VACUUM REFRIGERATING UNITS

SALES OFFICES

ROSS HEATER & MFG. CO., INC.

2 RECTOR STREET, NEW YORK, N. Y.

820 SO. MICHIGAN AVE., CHICAGO, ILLINOIS

KENNEDY BLDG., TULSA, OKLA.

MAIN OFFICE AND WORKS—BUFFALO, N. Y.

REPRESENTATIVES IN PRINCIPAL CITIES

BIG LAKE OIL COMPANY

Producers of

Reagan County High Grade

CRUDE OIL

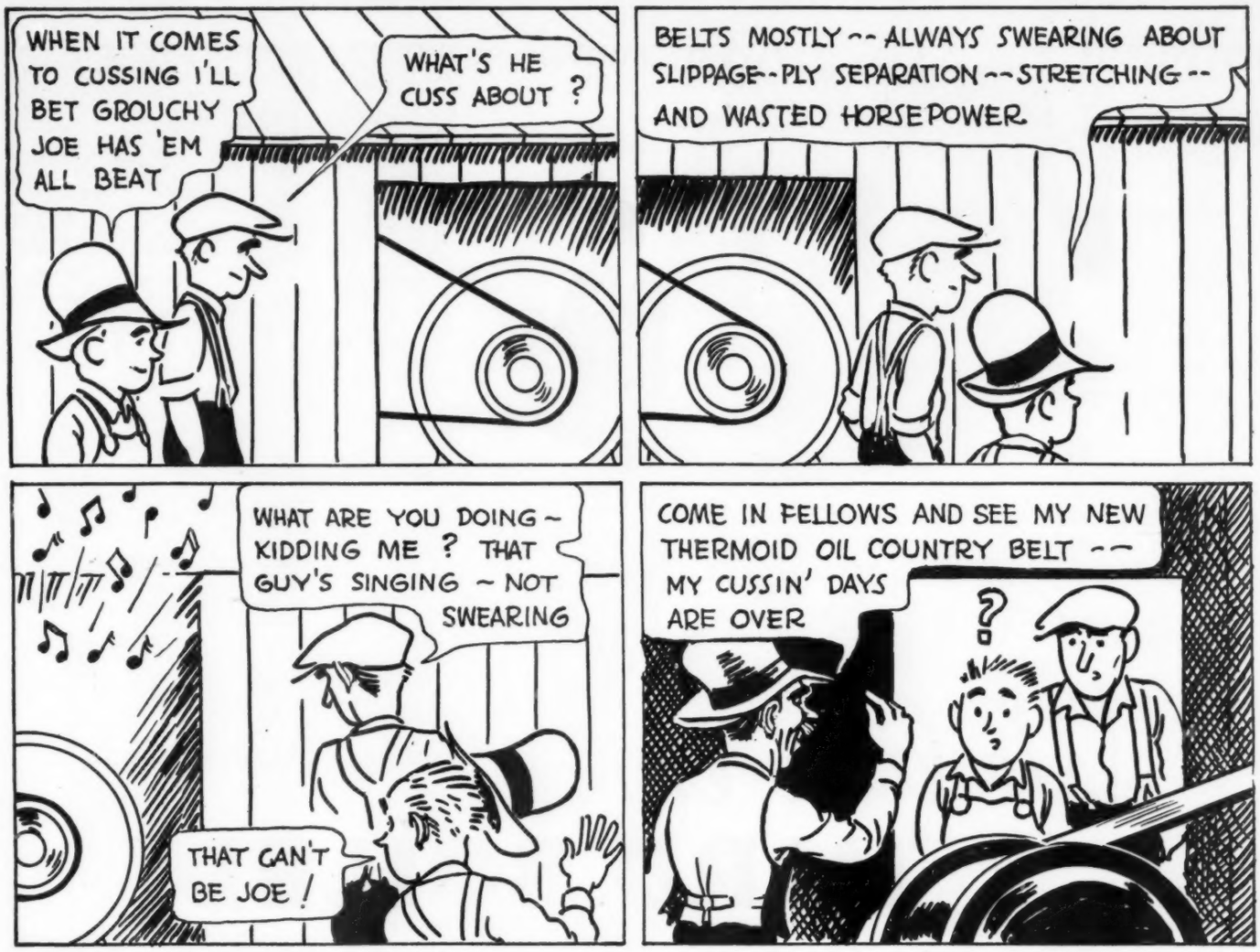
and

NATURAL GASOLINE

Executive Offices
PITTSBURGH, PENNA.

Field Offices
TEXON, TEXAS

JOE GOT A BELT TO SWEAR BY -- NOT AT !


WHEN IT COMES TO CUSSING I'LL BET GROUCHY JOE HAS 'EM ALL BEAT
WHAT'S HE CUSS ABOUT ?
BELTS MOSTLY -- ALWAYS SWEARING ABOUT SLIPPAGE -- PLY SEPARATION -- STRETCHING -- AND WASTED HORSEPOWER
WHAT ARE YOU DOING - KIDDING ME ? THAT GUY'S SINGING - NOT SWEARING
THAT CAN'T BE JOE !
COME IN FELLOWS AND SEE MY NEW THERMOID OIL COUNTRY BELT -- MY CUSSIN' DAYS ARE OVER

The Thermoid Oil Country Belt Saves power . . . and dispositions, too! Greater flexibility! Long life! New freedom from slippage, stretching and ply-separation. Built for the job . . . like all Thermoid products . . . by a manufacturer with a thorough knowledge of the job's requirements. Let your next belt be this new Thermoid with the amber friction and the violet edge.

Get the full facts, too, about: Thermoid Oil Country Belting . . . Rotary Hose . . . Steam Hose . . . Water Hose . . . Fire Hose . . . Suction Hose . . . Air Hose . . . Brake Lining . . . Packings . . . Stuffing Box Rings.

OIL WELL SUPPLY CO.

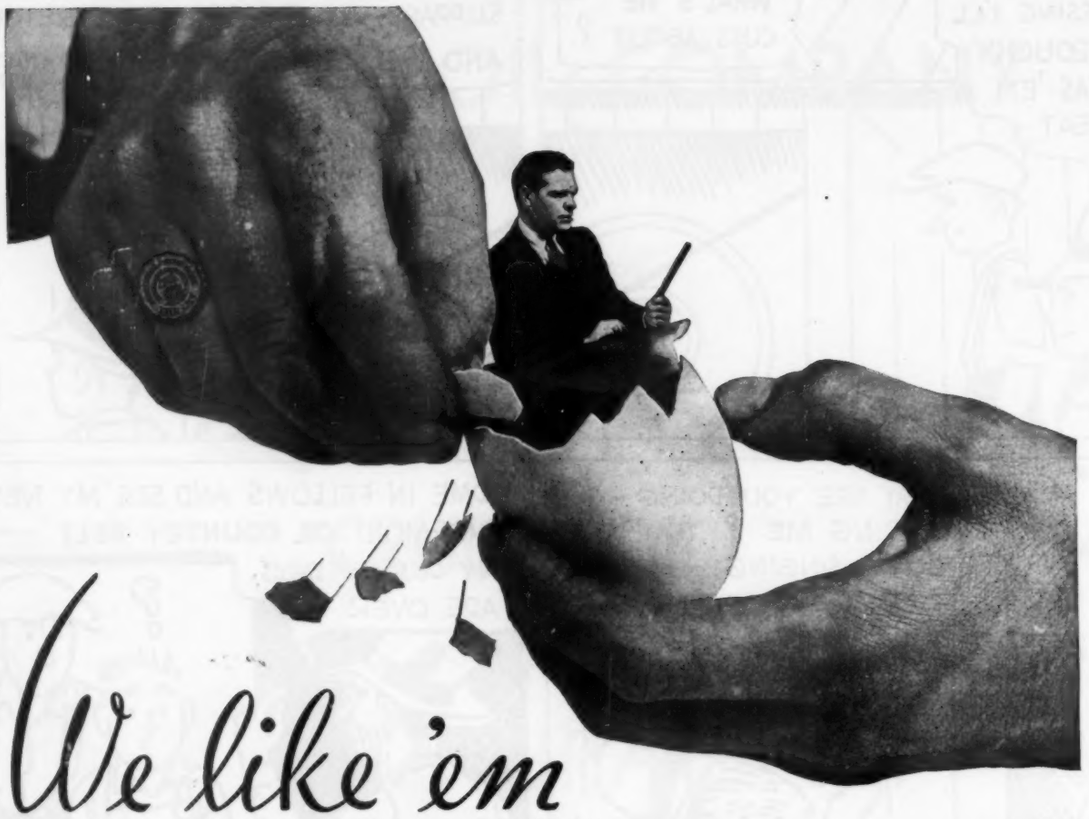
Branch Stores in all Oil Fields

Oil Country Distributors of

Thermoid

BELTING · PACKINGS

BRAKE LINING · HOSE



We like 'em "HARD BOILED"

. . . if they ask us to *prove* that TRU-LAY Preformed Wire Rope will save them money. We welcome such an inquiry from a man who knows what he wants . . . and wants to be shown. That's the way our best customers have been hatched, because shrewd and careful buyers are alive to possible savings in wire rope.

We expect you to be "hard-boiled" in the matter. Because we know if you convince yourself that TRU-LAY gives much better and longer service, we will add another customer to our long list of TRU-LAY users.

NON-PREFORMED

PREFORMED

"I-T" (internal tension) in wire rope is eliminated by preforming strands and wires to their exact helical shapes . . . so they lie in place *relaxed*. As a result, TRU-LAY Preformed Wire Rope gives much longer service and greater efficiency.

TRU-LAY combats fatigue, is easier and safer to handle, resists kinking and high-stranding. Each strand carries an equal load.

The sum of these and other advantages results in worth while wire rope savings.

Tell us your wire rope usage and service. Our experience over a long period of years, in hundreds of instances and applications will prove in good stead . . . to lower *your* wire rope costs, just as we have lowered wire rope costs for others.

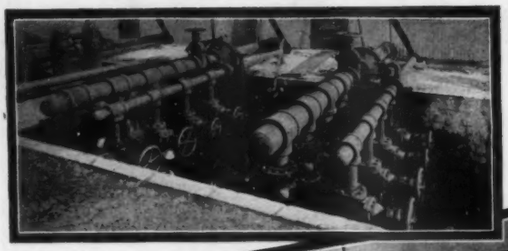
Try TRU-LAY Preformed Wire Rope. An ounce of experience is worth a ton of advice.

Address the AMERICAN CABLE COMPANY, *Inc.*
WILKES-BARRE, PENNSYLVANIA

An Associate Company of the American Chain Company, *Inc.*
District Offices: Atlanta, Chicago, Detroit, Denver, Houston, New York, Philadelphia, Pittsburgh, San Francisco

Dependable valve service is assured

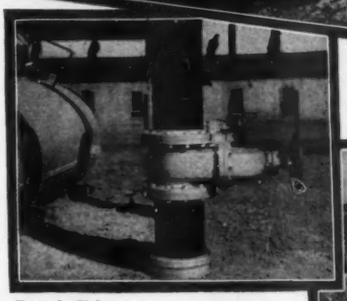
—*where KENNEDYS are installed*



Kennedy Valves at manifold of tank farm.

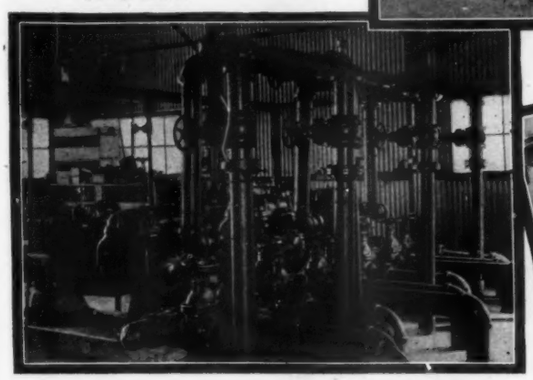
Kennedy Valves at pumping station.

Kennedy Valves on high pressure pumping service.

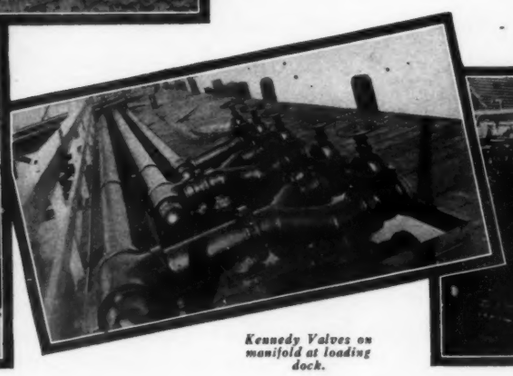


Kennedy Valves on gas stripper.

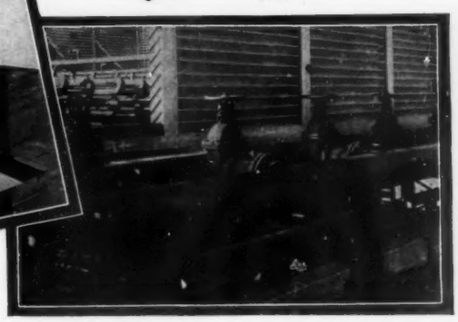
Kennedy Valves at gas lift station.



Kennedy Valves in compressor room.



Kennedy Valves on manifold at loading dock.



Kennedy Valves on manifold of cooling coils.

THE wide variety of pipe line, power plant, refinery and field installations of Kennedy Valves shown in the accompanying illustrations indicate the many types of oil and gas industry service for which these valves are built.

The large Kennedy line includes 250-lb., 400-lb., 700-lb., 1000-lb., 1600-lb. and 2500-lb. test gate valves and also globe, angle and check valves for standard, medium and extra heavy pressures. Each type is specially designed for its particular operating conditions, and has conclusively proven its thorough reliability over long periods of service.

Kennedy products for the oil and gas industry also include complete lines of standard cast iron flanged fittings and flanges, and malleable iron and brass screwed fittings.

Large stocks maintained by dealers and the Kennedy warehouses provide prompt delivery for all standard requirements, and the extensive manufacturing facilities of two large plants assure quick shipment on special orders.

The Kennedy Valve Mfg. Co.,
Elmira, N. Y.
Sales offices in principal oil centers

KENNEDY

VALVES-PIPE FITTINGS-FIRE HYDRANTS

the Reid Band Wheel Power is not in an Experimental Stage!

its worth has been proven in every oil field . . . . . .

We invite any comparison you can make

Your investment in multiple pumping equipment should be made on the basis of certainty, consequently, Reid Band Wheel Powers should be given every consideration.

Their superiority is common knowledge; they are built for hard, gruelling loads and long-continued loads. Shock loads are inevitable; in the Reid Band Wheel Power these are absorbed by the belt. Stored fly wheel effect helps to carry it over unbalanced peaks which occur when you throw off pumped off wells and throw on wells with a head.

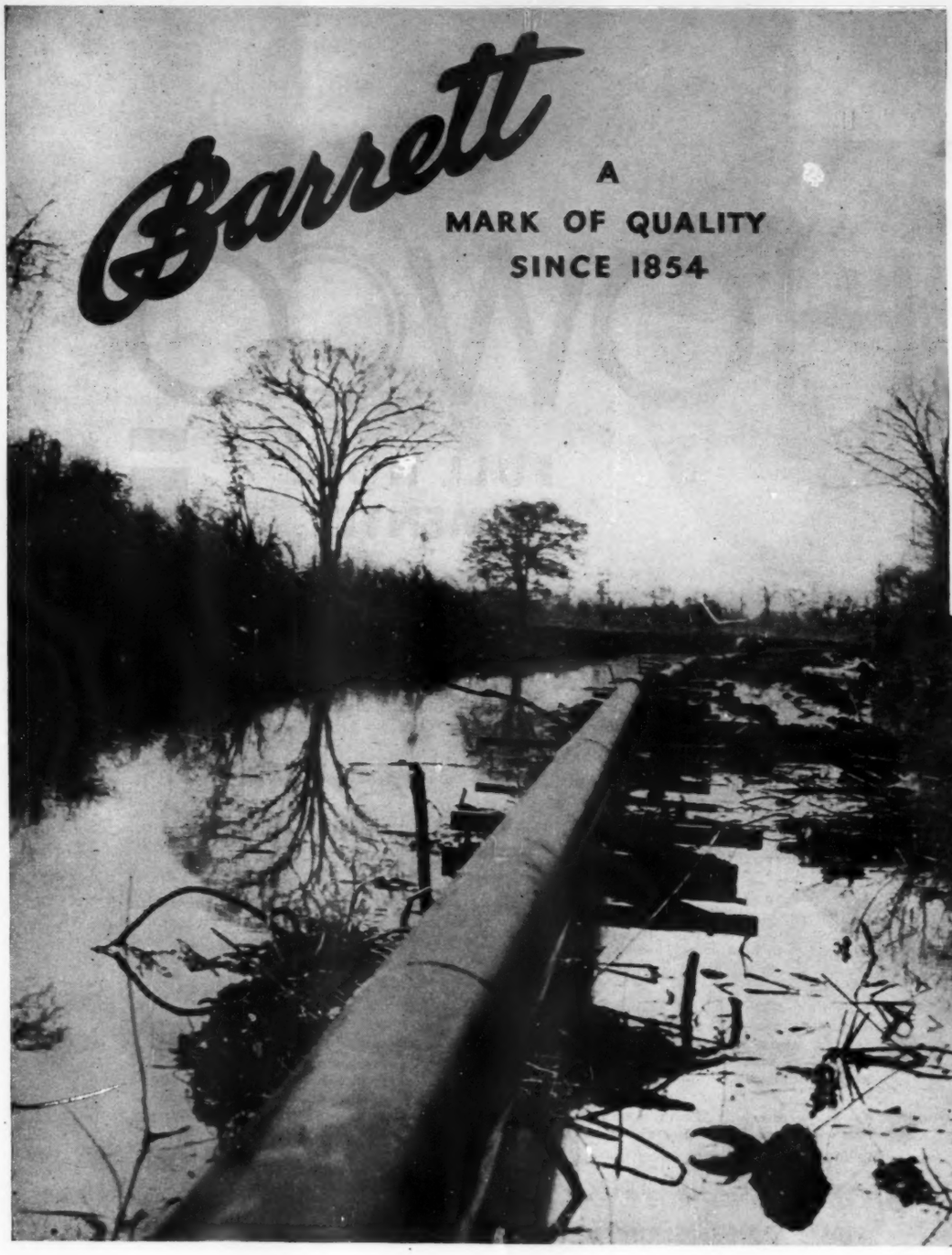
OTHER FEATURES: Few working parts. All parts readily accessible for inspection or repairs. Dust-proof construction. Wheel construction for rigidity. Dependable mechanical lubrication. Patented positive driving arrangement. Sized for installations from 15 to 100 horsepower. Simplicity is the keynote of these units and they invariably deliver years of uninterrupted service, with extremely low maintenance. Used in every oil field.

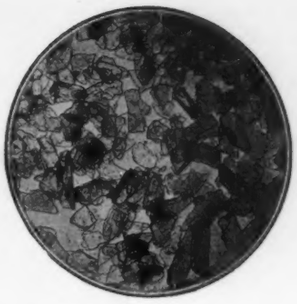
Joseph Reid Gas Engine Company

Oil City, Pennsylvania
U. S. A.

Frick-Reid Supply Corp.
Pittsburgh and Tulsa

R. B. Moore
Bolivar, N. Y.





Reproduction of the photomicrograph above shows the inter-locking of the flakes of the internal reinforcement used by Barrett. By laminating with the water-proofing agent they give Barrett Pipe Line Enamels unusual toughness and resistance to soil stresses.

For pipe of large diameter The Barrett Company will furnish equipment required to revolve pipe and spread enamel.

Avoid the necessity of frequent reconditioning

Immense mileages of oil and gas lines *today* need reconditioning. This is largely because the technology of both making and applying protective enamel coatings was virtually unknown when many of these lines were laid. Recondition these lines with Barrett Specification Pipe Line Enamels—and avoid a similar expense for many years to come. Our engineers will gladly co-operate with you. 'Phone, wire or write.

The Barrett Company

40 Rector Street, New York, N. Y. 2800 So. Sacramento Avenue, Chicago, Ill.

Barrett Specification

PIPE LINE ENAMELS

HOWCO

FULL HOLE CEMENTER

Presents **14 IMPORTANT ADVANTAGES**

1. Allows drilling a full-sized hole in oil or gas sand, with a 30 to 50% greater recovery of cores.

2. Provides up to 66⅔% more drainage surface per foot of sand than in reduced hole practice.

3. Provides up to 33⅓% more screen area.

4. Provides a wide margin of safety against drilling into bottom hole water in a saturated oil sand, as you need only penetrate the sand ½ to ⅔ as deep as in reduced hole practice to get the same drainage surface.

5. Eliminates expense of hauling, making up and running drill stem inside the production string to drill cementing plugs. (The plugs may be drilled by the flow string of tubing.)

6. Allows the well to be put on production within two hours after the cementing plugs have been drilled.

7. Materially increases useful life of well.

8. Allows the setting of screen or perforated liner of the same size as production string, thorough washing of muck and cavings from behind the screen and cementing the casing—in one continuous operation.

9. When used in combination with HOWCO Cement Lining for Screens or Perforated Liner it gives utmost assurance that the space between the screen and sand is thoroughly clear of heavy muck, cavings, etc.

10. Permits setting larger insert screen, if necessary, at later date.

11. Eliminates expense of cutting and fishing of screen or perforated liner when necessary to deepen well—a saving which often amounts to $2500.00 per well.

12. Less energy required for the oil to travel from the sand into the hole, permitting greater freedom of flow from the sand into the well during the pumping stage—(actual profit on original investment is very often dependent upon economically producing the last few thousand barrels per acre.)

13. With the same size hole and screen in the sand as in reduced hole practice, allows original investment per well to be materially reduced by running casing of the same size as screen.

14. With the same size casing and considerably larger hole in the sand than in reduced hole practice, it still allows a slight reduction in original investment, but materially increases ultimate profit.

In other words:

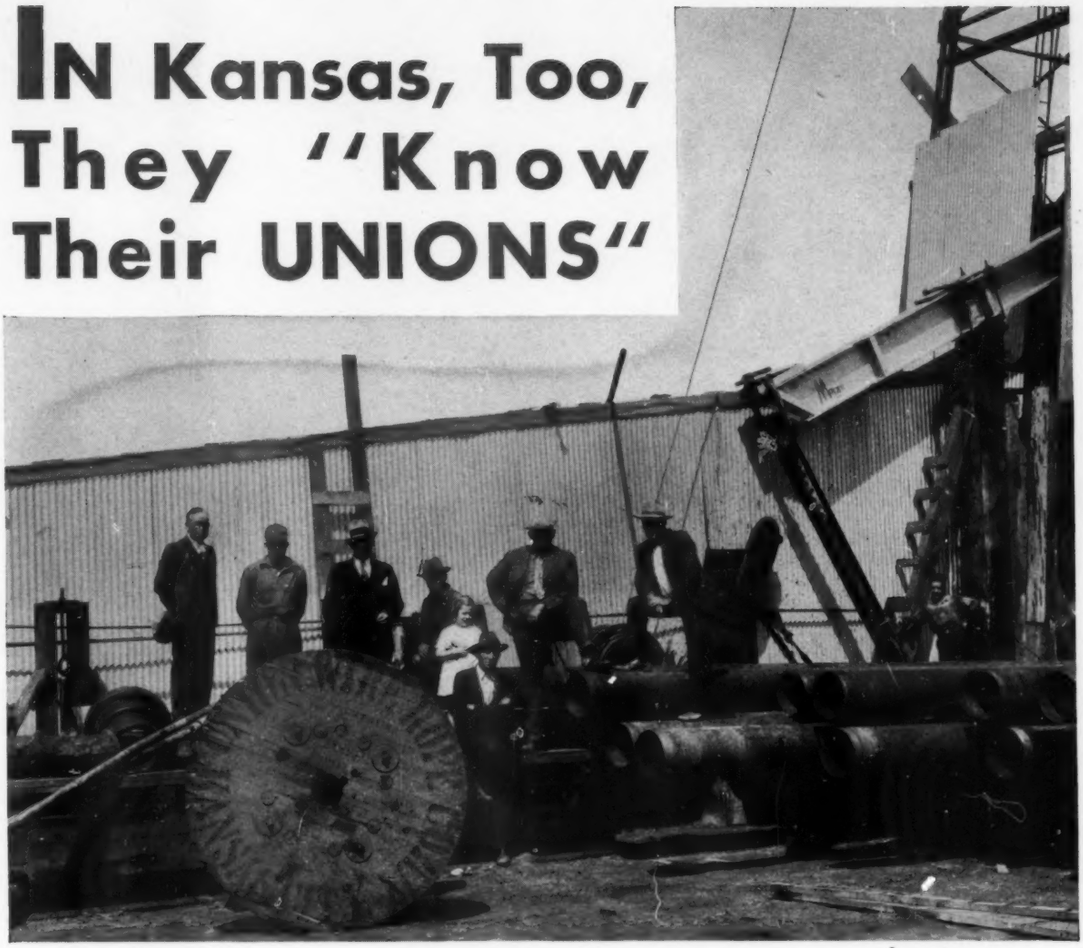
The Full Hole Cementer accomplishes, in a modern manner, an aim almost as old as the oil industry itself — larger drainage surface — accomplished at the least original cost and yielding greater ultimate profit.

HALLIBURTON

OIL WELL CEMENTING CO.

Duncan, Oklahoma

IN Kansas, Too, They "Know Their UNIONS"



The folks in the picture, left to right:

Ray Johnson, Jarecki Mfg. Co.
Chick Wright, Tooldresser, Mid-Kansas O. & G. Co.
Ed. Frye, Union Wire Rope Corp.
Elinor Frye, learning the ropes from her Dad.
George Agard, Driller
Wilbur Lusher, Tool Pusher
Frank Linkenfelter, District Foreman

Standing in front:

Bruce Aug, Farm Boss

The photograph shows the Mid-Kansas Oil and Gas Company Duerksen No. 3, Hollow Pool, Harvey County, Kansas . . . drilled with a UNION Drilling Cable

In Kansas, as in other states and in other countries, experienced operators know UNION Wire Lines . . . know that UNION Wire Lines can be depended upon for good service and low wire rope costs.

UNION WIRE ROPE CORPORATION
3 North Madison Ave., Tulsa, Oklahoma
Branch Office and Warehouse, Portland, Oregon
FACTORY: 21st and Manchester, Kansas City, Missouri
JARECKI MANUFACTURING COMPANY
Mid-Continent and Eastern Oil Fields Distributors
Stocks at all stores

UNION WIRE ROPE CORP
TRADE MARK

UNION WIRE LINES

The "ULTIMATE LOW COST WIRE ROPE"

"I want to know the formations I am

GOING THROUGH

—and the surest way to accomplish this is by securing good cores. The Core Bit used must produce results regardless of formation—hard are soft, sticky or brittle, tough or gummy.

Hughes Cutter-Heads for either hard or soft formations are instantly interchangeable.

So I use a HUGHES CORE BIT"

HUGHES TOOL COMPANY

Service Plants	*Main Office and Plant*	*Export Offices*
Los Angeles, Calif. Oklahoma City, Okla. Midland, Texas	HOUSTON, TEXAS	19 Rector Street New York City